FLOWERING PLANTS OF GREAT BRITAIN

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THE

FLOWERING PLANTS,

GRASSES, SEDGES, AND FERNS

OF

GREAT BRITAIN,

AND THEIR ALLIES

THE CLUB MOSSES, PEPPERWORTS, AND HORSETAILS.

By ANNE PRATT,

AUTHOR OF "OUR NATIVE SONGSTERS," "WILD FLOWERS," ETC.

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VOL. V.

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THE

FLOWERING PLANTS

OF

GREAT BRITAIN.

Order LXXVI. EUPHORBIACEÆ.—SPURGE TRIBE.

Stamens and *pistils* in separate flowers; *perianth* of 3, 4, or more lobes, sometimes wanting; *stamens* varying in number and arrangement; *ovary* mostly 3-celled, with as many styles and stigmas; *fruit* usually 3-celled and 3-seeded. The description here given of the Order includes all the British genera; but many of the tropical genera are furnished with both sepals and petals. Our native species have herbaceous or woody stems, sometimes leafless, but usually with opposite, alternate, or whorled leaves. They are mostly milky herbs, and of a highly corrosive, acrid, or narcotic character. Some of the exotic plants of the family yield the most deadly poisons. The Manchineel (*Hippómané Mancinella*), whose shadow proves fatal to the sleeper; and the Manioc of the West Indies (*Jatropha*

Manihot), the juice of which will in a few minutes cause death, are among the dangerous species; but on the other hand we owe to this Order the castor oil, which is extracted from the seed of *Rícinus commúnis*, and the caoutchouc of Guiana, which is the thickened juice of *Siphónia elástica;* while even the poisonous Manioc affords in its root the nutritious cassava, the bread made of which is by the Creoles preferred to that made of wheaten flour, and from the same root we derive the useful tapioca. The gum resin, or Euphorbium of the chemist, is procured from three species of Spurge growing in Africa and the Canary Islands.

1. Mercuriális (Mercury).—*Stamens* and *pistils* on different plants; *perianth* 3-cleft to the base; *barren flower* with 9 or more *stamens; fertile flower* with 2 styles; *ovary* 2-lobed; *capsule* 2-celled, 2-seeded. Name in honour of the god Mercury, who is said to have discovered the virtues which were attributed to the plant.

2. Euphórbia (Spurge).—*Perianth* or *involucre* bell-shaped, containing 12 or more barren flowers or stamens, and 1 fertile flower or pistil; *ovary* 3-lobed; *styles* 3; *stigmas* 2-cleft; *capsule* 3-celled, 3-seeded. Name from Euphorbus, physician to Juba, king of Mauritania, he having first used the plant medicinally.

3. Buxus (Box).—*Stamens* and *pistils* in separate flowers on the same plant; *perianth* 4-cleft to the base; *barren flower* with 1 bract; *stamens* 4; *fertile flower* with 3 bracts; *styles* 3; *capsule* with 3 horns, 3-celled; *cells* 2-seeded. Name changed from *pyxos*, the Greek name for this tree.

1. Mercuriális (Mercury).

1. *M. perénnis* (Perennial, or Dog's Mercury).—*Stem* unbranched; *flowers* in lax axillary spikes; *barren flowers* on long stalks; *leaves* egg-shaped, serrated, stalked, somewhat rough; *root* creeping, and perennial. This plant is well known to all who observe the common things around them. Sometimes it is to be seen growing in great abundance on the hedge-row or in the wood; and those who have gardens see, in early spring, numbers of its light green leaves, with almost whitish veins, developing themselves upon the flower-bed; and though the foliage, as it is older, becomes of a deeper green, yet it is never of a very dark hue. The plant is about a foot high, bearing its leaves chiefly on the upper part of the stems, several of which arise from its creeping roots. During April, May, and June, the green flowers grow in loose spikes from among the leaves, and the long-stalked barren ones are conspicuous by their numerous stamens. From the growth of the plant in towns and town gardens, it is sometimes called Town-weed; and in Kent it is known as Kentish Balsam, from the similarity of the leaf to that of the garden Balsam. The old herbalists called it Dog's Cole, and Cynocrambe. The French term it *Mercuriale;* the Germans, *Bingelkraut;* the Italians, *Mercorello;* and the Russians, *Proleska.* It is very poisonous both to man and the inferior animals, and many cases are recorded of serious illness having resulted from eating this plant in mistake for one of the Goosefoots. Sheep someitmes suffer from eating this plant. It is observed that

the stamen-bearing and pistil-bearing plants generally grow each in separate patches, so that the Mercury produces comparatively few seeds, and is chiefly propagated by the roots. The leaves, on drying, become of a blue colour. It affords a fine deep blue tint, which is, however, destroyed by acids or alkalies.

2. *M. ánnua* (Annual Mercury). — *Fertile flowers* whorled, nearly sessile; *stem* with opposite branches; *leaves* smooth; *root* fibrous and annual. In one form of this species the fertile and barren flowers are on distinct plants, the leaves egg-shaped or oblong, and the flowers in lax spikes: in another form, the barren and fertile flowers are intermixed, and grow in whorls, while the leaves are lanceolate. This species is not frequent, though occasionally growing in the neighbourhood of towns and villages in abundance, as it does about Dover. It is taller than the preceding, is branched, and has smaller leaves of a light green colour; it also flowers later in the year, and its little green blossoms do not appear before August. The leaves abound in a mucilaginous substance, and do not partake of the poisonous properties of the other species. They are, indeed, in Germany frequently used as spinach, though their wholesomeness, if used without boiling, would seem somewhat doubtful, for the water in which they are cooked possesses powerful medicinal properties. The plant was formerly prescribed by medical practitioners, and Linnæus mentions it as an anodyne. George Herbert, in his "Priest to the Temple," while enumerating the duties of the "Parson" and his family, says, "For salves his wife seeks not the city, but prefers her gardens and fields before all out-

landish gums; and surely hyssop, valerian, mercury, adder's tongue, melilot, and St. John's-wort, made into a salve, and elder, comphrey, and smallage, made into poultice, have done great and rare cures." The pious author adds, "In curing of any, the Parson and his family use to premise prayers; for this is to cure like a parson, and this raiseth the action from the shop to the Church."

2. Euphórbia (Spurge).

* *Leaves with stipules.*

1. *E. Péplis* (Purple Spurge).—*Stem* prostrate, forked; *leaves* oblong, heart-shaped, nearly entire; *flowers* axillary, solitary; *glands of the involucre* rounded on the outside; *capsule* smooth, keeled; *seeds* white and smooth; *root* annual. This plant is peculiar to the sands of the sea-shore, and is found on the coasts of Devon and Cornwall. It lies quite flat upon the sand, sending out its numerous branches in a circular direction. Its stems are of a glaucous green, much tinged with purple, and its green blossoms expand from July to September.

* * *Leaves without stipules.*

2. *E. helioscópia* (Sun Spurge).—*Umbel* of five rays, which are often repeatedly forked; *bracts* and *leaves* membranous, inversely egg-shaped and wedge-shaped, serrated upwards; *capsule* smooth; *seeds* rough and reticulated; *root* annual. This is a common plant on waste and cultivated grounds, and every child knows it by one or another of its familiar names. Country people call it Churn-staff, Wart-weed, Cat's-milk, Wolf's-milk, and

Little-good. The old herbalists termed it Sun Tithymale, and in Holland it is commonly called Wolfen-milch. It is a troublesome weed in corn-fields and gardens, varying in height from a few inches to two feet, and having, in July and August, a spreading umbel of bright greenish-yellow flowers, which is large in proportion to the plant, and has several serrated leaves close beneath it. The milky juice is an old remedy for the cure of warts and other excrescences of the skin, and is of a very caustic nature. Many a child who has held it near his eyes has felt them pained by its irritating influence; and children who bite its leaves are often alarmed by the burning sensation which it leaves on the tongue, till this is allayed by a draught of milk. Dr. Johnston remarks that a case is on record in which a boy was killed by swallowing a piece of this Sun-spurge. If we break a leaf of the plant in two, we see minute white drops oozing from each part; though it is remarkable that if the leaf be altogether severed from the stalk, and then broken, this milk is not perceptible. The species all possess more or less of the milky juice, which contains caoutchouc, and which will redden the skin, or even blister it if delicate. The old Greeks tell how this acrid sap was dropped into the eye to remove spots on the cornea. It has powerful medicinal properties, and is used by country people as a caustic for the bite of a viper, and sometimes rubbed on the skin behind the ear as a cure for tooth-ache. Sheep are said by Linnæus to eat the plant, and to be injured by it, while it also imparts an unpleasant flavour to their flesh. The ancients commonly used the thick milky juices of plants


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for making sympathetic ink, and letters were written with milk of this kind, and strewed over with black powder; but any other glutinous substance would have served the purpose as well. The French term the plant *L'Euphorbe;* and it is called by a synonymous word in all the Continental countries.

3. *E. platyphýlla* (Broad-leaved warted Spurge).—*Umbel* of about five principal 3-cleft and 2-cleft branches; *bracts* heart-shaped; *leaves* membranaceous, broadly inversely egg-shaped, lanceolate, acute, finely serrated; *glands of the involucre* oval, yellow; *capsule* warted; *seeds* brownish and smooth; *root* annual. This plant is not common, but may be found in the corn-fields of Tunbridge Wells, and also in several parts of Kent, and some other counties. It might be at first mistaken for a stunted specimen of the Sun-spurge, but it has, in many instances, the leaves slightly hairy beneath, and the capsules are rough, with minute tubercles at the back. Its green flowers appear from June to October. The authors of the "British Flora" remark, "A plant agreeing with Reichenbach's figure of *E. stricta,* and differing by the leaves been narrowed above the base, instead of narrowed gradually to the base, from the common form of *E. platyphýlla,* occurs between Tintern and the Wind-cliff."

4. *E. Hibérna* (Irish Spurge).—*Umbel* of about five principal branches; *bracts* and *leaves* egg-shaped or elliptical, entire; *glands of the involucre* four in number, kidney-shaped, with intermediate rounded lobes; *capsule* warted, shining; *seeds* smooth; *root* perennial. This species is found in hedges and thickets in the South of

Ireland, and on a few spots in England, as about Brendon in North Devon, and between Feversham and Sittingbourne, in Kent. Its stem is from a foot to a foot and a half high, and the glands of the involucre purple. The leaves are broad and slightly hairy, beneath, and it flowers in May and June.

5. *E. palústris* (Marsh Sun-spurge).—*Umbel* about 5-cleft, then 3-cleft, and 2-cleft; *bracts* all elliptical, shining, entire; *leaves* broadly lanceolate, minutely serrated, slightly hairy; *glands of the involucre* 4, transversely oval; *capsules* warted, hairy; *seeds* inversely egg-shaped, minutely dotted, smooth; *root* perennial. This is Mr. Babington's description of a plant sometimes termed *E. pilósa*. It flowers in May and June, and its stem is from two to four feet high, and leafy throughout. It occurs in shady places near Bath.

6. *E. corallóides* (Coral-like hairy Spurge).—*Umbel* 5-cleft, then 3-cleft, and 2-cleft; *bracts* egg-shaped, oblong and hairy; *leaves* lanceolate, minutely serrate, woolly; *glands of involucre* transversely oval; *capsule* nearly smooth, woolly; *seeds* inversely egg-shaped, minutely dotted, and with faint netted bands. This is an introduced plant, found in hedges at Slinfold in Sussex. The height of its stem is from two to three feet, with the leaves nearly all at the upper part, and its greenish flowers appear in May and June. The plant is said to be extensively used by the peasantry of Kerry for stupefying fish.

7. *E. Ésula* (Leafy-branched Spurge).—*Umbel* many-cleft, then 2-cleft; partial *bracts* heart-shaped, blunt spine-tipped; *leaves* membranaceous, lanceolate, or linear-



MAIDEN SPURGE
Euphorbia [illegible]
CORAL LIKE HAIRY
E. coralloid[illegible]
LEAFY BRANCHED
E. esula
4 CYPRESS
E. cyparis[illegible]

lanceolate, narrowed below, shining; *glands of the involucre* roundish, with 2 horns; *seeds* inversely egg-shaped, smooth; *root* creeping and perennial. This Spurge is rare in woods, and probably not truly wild. Its stem is from twelve to eighteen inches high, leafy, with a few axillary leafy branches. It flowers in July, and is found at Slinfold, Sussex, on the banks of the Tweed, and in woods near Edinburgh.

8. *E. Cyparíssias* (Cypress Spurge).—*Umbel* of many principal branches, and several scattered footstalks below; *bracts* heart-shaped; *leaves* linear, entire, membranaceous, shining; *glands of the involucre* moon-shaped; *capsules* nearly smooth; *root* perennial. This Spurge is readily known from all other British species by its slender grass-like leaves. It is not a common, and probably not an indigenous plant, though long since naturalized in the woods of Northumberland, and some other counties. It possesses powerful and dangerous properties, but it appears in old times to have been very highly prized as a medicine both in this and other European countries. It was formerly called Welcome to our House, and Quacksalver's Spurge, and it is still termed in French villages *Rhubarbe des Pauvres*, though it is to be hoped that it is not in general use among the poor. A French physician records a case in which it proved fatal to a woman who took it medicinally. Sheep and other animals will sometimes eat it, but it is poisonous if taken in great quantity.

9. *E. Parálias* (Sea Spurge).—*Umbel* of about 5 principal 2-cleft branches, often with inferior scattered ones; *bracts* somewhat kidney-shaped; *leaves* leathery elliptic-

oblong; *glands of involucre* with 3 or 4 short points; *capsule* wrinkled; *seeds* smooth; *root* woody, tough, and perennial. This, though not a generally distributed plant of our sea-coasts, is abundant on some of the sandy shores of England, and also near Dublin. It is remarkable for the glaucous hue of its leaves, which are very numerous, and so crowded, especially on the young shoots, that they overlap each other. It is a stout, somewhat shrubby plant, several stems arising from one root. These are woody below, and shorter than the flowering one, which is about a foot high. The yellowish green flowers may be seen from August to November. Gerarde, speaking of the Spurge plants, says, "But the strongest is that which grows near the sea. Some write by respect of others that it enflameth exceedingly, but myselfe speak by experience; for walking along the sea-coast at Lee in Essex, with a gentleman called Mr. Rich, dwelling in the same towne, I tooke one drop of it in my mouth, which neverthelesse did so inflame and swelle in my throte that I hardly escaped with my life. And in like case was the gentleman; which caused us to take our horses and poste for our lives to the next farm-house to drinke some milke, to quench the extremitie of our heate, which then ceased."

10. *E. Portlándica* (Portland Spurge).—*Umbels* 5-cleft, then 2-cleft; *bracts* triangular, heart-shaped; *leaves* membranaceous, inversely egg-shaped, or inversely egg-shaped and lanceolate; generally blunt, and somewhat spine-tipped; *glands of the involucre* 4, crescent-shaped, with two long points; *capsule* rough at the angles; *seeds* almost white, and dotted; *root* perennial. This species

grows on the sandy sea-coasts in the South and West of England, in Wales, the Isle of Man, about Dublin, and in the South of Scotland. It received its name from Portland Island, where it has been long abundant, and where Mr. Gosse saw it recently, in such quantity, that he says it is quite a characteristic of the place. The stem is scarcely a foot high, the leaves are numerous, and spread out in dense rosettes on the ground. The plant is smooth and glaucous, and the stems and leaves are often much tinged with red. It is a much less stout and conspicuous species than the last, but is one of the most caustic of the genus. It flowers from May to August.

11. *E. Péplus* (Petty Spurge).—*Umbel* 3-cleft, then forked; *bracts* egg-shaped; *leaves* membranaceous, broadly egg-shaped, stalked, lower leaves roundish; *glands of the involucre* crescent-shaped, the horns very long; *capsule* smooth, with thickened rough keels; *seeds* oval, dotted; *root* annual. This Spurge is abundant in waste places and cultivated fields, and is, throughout the kingdom, a common garden weed. It is three or four inches high, of a very pale green, its three-rayed and forked umbel bearing numerous pale green flowers from July to October. It is much less acrid than most of the Spurge family, and might be safely used medicinally. It is often prescribed by physicians on the Continent, its powers existing in the oil of its seeds.

12. *E. exígua* (Dwarf Spurge).—*Umbel* 3-cleft, then forked; *bracts* lanceolate, acute, unequal below; *leaves* linear, blunt, or spine-tipped; *glands of the involucre* roundish, with 2 horns; *capsules* smooth, with slightly-

thickened and tubercled angles; *seeds* small, white, angular, wrinkled; *root* annual. This species is common in corn-fields on a light soil. It is distinguished from the last by its more slender habit, and by its narrow glaucous leaves. It is from three to six inches high, and branched from the base.

13. *E. Láthyris* (Caper Spurge).—*Umbel* of 3—4 principal 2-cleft branches; *bracts* heart-shaped and taper-pointed; *leaves* linear-oblong, sessile, *upper leaves* heart-shaped at the base; *glands of the involucre* crescent-shaped, with blunt horns; *capsules* smooth; *seeds* rough; *root* biennial. This plant is to be found in thickets and among underwood in many parts of the country. In some of these places it may be regarded as rather naturalized than indigenous; but Mr. Babington says, that it is truly wild in a few stony and rocky woods, where it appears for two or three years after the bushes have been cut. It is often seen in gardens, and was formerly much cultivated. It is easily distinguished fromour other species; it is taller than either of them, and looks like a small shrub, though truly herbaceous, but it is two, three, or even four feet high, and branched. It has not the usual bright green of our native Spurges, its foliage being of a deep, dark sea-green hue, covered with whitish bloom, and often a good deal tinged with purple. Its large heart-shaped, taper-pointed bracts are very conspicuous; and it has very large capsules, which, like all the rest of the plant, are full of milky juice. Its green flowers are produced in June and July. The plant is used medicinally in several countries of the Continent, the dose being from twelve to fifteen of the



3 RED SHRUBBY

4 BOX.

seeds, and when skilfully administered, it proves a valuable remedy. The seeds are very acrid, yet they are sometimes pickled and eaten instead of capers with meat, but their wholesomeness is doubtful. Their caustic properties are, however, doubtless diminished by being steeped in vinegar; for it is well-known that the ancients were accustomed, after drying plants of this family, to steep them in vinegar to remove their acrimony; and by means of a similar process, many of our otherwise poisonous vegetables, as toad-stools, are rendered innocuous.

* * * *Bracts united at the base as if forming a perfoliate leaf.*

14. *E. amygdalóides* (Wood Spurge).—*Umbel* 5, or many-cleft, then 2-cleft; *leaves* egg-shaped, lanceolate, hairy beneath, entire; *glands of the involucre* yellow, crescent-shaped with 2 horns; *capsules* minutely tubercled; *seeds* smooth; *root* perennial. This plant, which is the *E. sylvática* of Linnæus, is one of the handsomest of our native species, and is very frequent in woods and thickets. It is of a similar bright green colour to the Sun-spurge, and both in autumn and in spring is remarkable for the purplish red tinge on its stems and leaves. It is very pretty during March and April, when its stems, sometimes two feet high, are surmounted by its leaves and flowers of golden green. Towards the end of summer the plant becomes almost shrubby.

The Red Shrubby Spurge (*E. Cháracias*), a large and handsome garden species, is generally enumerated among

our wild or naturalized plants, having been said to grow in Needwood Forest, Staffordshire, where, however, it is not now to be found.

3. Búxus (Box).

1. *B. sempervírens* (Common Box).—*Leaves* oval, oblong, tough, shining above, foot-stalks fringed; *anthers* egg-shaped, arrow-shaped; *root* perennial. All are familiar with the dwarf variety of the Box, as seen in the garden, where it forms an edging; and in many gardens the box is to be found growing into a shrub, or even a good-sized tree. But we do not often see the Box-tree wild in our woods, except on some dry chalky hills in the South of England. Whether, indeed, the plant is truly indigenous is somewhat questionable, but we may certainly claim for it a long-established place in this kingdom, since Boxley in Kent, Boxwell in Gloucestershire, and Boxhill in Surrey, evidently received their names from the growth of the plant in their neighbourhoods; and the latter spot is still richly decked with this tree.

The Box-tree looks exceedingly well in shrubberies, from the contrast which it affords by its yellowish green hue to hollies and other evergreens. Both the older and modern poets have compared it to the pale aspect of man. Chaucer says—

> "Therewith the fire of jealousy up sterte
> Within his brest, and hente him by the herte,
> So woodly, that he like was to behold
> The Box-tree, or the ashen ded and cold."

Dryden thus renders a similar image—

> "He withers at his heart, and looks as wan
> As the pale spectre of a murder'd man,
> That pale, turns yellow, and his face receives
> The faded hue of sapless boxen leaves."

Evelyn describes the luxuriant growth of the Box on our hills in his day. "These trees," he says, "rise naturally at Boxley, in Kent, and in the county of Surrey, giving name to that chalky hill (near the famous Mole, or Swallow) whither the ladies and gentlemen, and other water-drinkers from the neighbouring Evesham Spaw, often resort during the heat of summer, to walk, collation, and divert themselves in those antilex natural alleys and shady recesses among the Box-trees, without taking any such offence at the smell, which has of late banished it from our groves and gardens." He adds, that "whole woods of these trees for divers miles in circuit, look beautiful in winter on some of our highest hills in Surrey, and so singular, that the observer could imagine himself in some other country than England." The Box-tree still grows in plenty on Box-hill among the juniper bushes, but it is not in nearly so great profusion now, for as lately as the year 1815 an immense number of trees were cut down to supply wood for the blocks of the engravers; and for many years previously this spot had contributed largely of this valuable wood for this purpose. It now occurs without cultivation in this place only, and there is much reason for believing that the Box was originally planted on all the hills of this kingdom, where it once grew so freely; and it is not

improbable that the Romans may have reared it for its use at civic or religious festivals. One of our oldest English writers on plants, Turner, says of it, when writing in 1551, "It groweth on the mountains of Germany plentifully, wild, without any setting; but in England it groweth not by itselfe, in any place that I know, though there is much in England." John Ray and Gerarde, however, both considered it a native plant.

The Box is wild in most parts of Europe, from Britain southwards; and in many parts of France and Switzerland it is very abundant as a thick undergrowth among other trees, but not forming a forest by itself. It abounds also in many countries of Asia; and Poncet comments on the beauty of the Box-trees which grew on the banks of the rivers in Abyssinia, and which he describes as of surprising thickness, and as tall as beech-trees. It is a favourite tree of the Asiatics, who call it *Shumshad*. It is plentiful on Mount Caucasus, and extends even to the Himalayan mountains, where it grows to a great size. The Box is mentioned in Scripture, and modern botanists believe the rendering of our early translators to be correct. Thus the Prophet Isaiah says, with reference to the future Temple: "The glory of Lebanon shall come unto thee, the Fir-tree, the Pine-tree, and the Box together;" and again, "I will set in the desert the Fir-tree, and the Pine, and the Box." As the Box is peculiarly a tree of mountainous regions, and well fitted to the calcareous soils of Mount Lebanon, and as its wood is hard and firm, it seems likely that it would be brought with the firs and pines for the service of the builder, while, by its beauty and

its hardy nature, when contrasting with the dark firs, it would be well adapted for removing the dreary aspect of the desert. The ashur-wood, too, is believed to be the Box. The Prophet Ezekiel, when referring to the magnificence of Tyre, describes the benches of the rowers as made of ashur-wood, inlaid with ivory; and Virgil and other ancient writers allude to the practice of inlaying box-wood with this material.

The Box-tree was, both in this country and in Rome, used for cutting into various forms. Pliny the younger relates how he had at his country seat Box-trees cut into the forms of men on horseback, a hunter with his hounds, quadrupeds, vases, and other objects; and mentions, that one Box-tree was so large as to be cut into different apartments. Martial mentions clipped Box-trees as ornamenting the gardens at the house of Bassus. From our own old writers we learn that the topiary art came into practice in this country at the commencement of the sixteenth century; and Lawson, who wrote at the close of it, remarks, that the lesser wood might be framed by a gardener to the shape of men armed in the field, "ready to give battel, or swift running greyhounds, or of well-scented and true-running houndes to chase the deere, or hunt the hare." "This kind of hunting," he quaintly adds, "shall not waste your corne, nor much your coyne." The taste for these verdant sculptures was at its height in the seventeenth century, but after that time most lovers of gardens came to agree with the sentiment of Lord Bacon, who says, "I, for my part, do not like images cut out of juniper or other garden stuffe, they be for children."

The wood of the Box is very valuable, and very durable; and, as Virgil said—

"Smooth grain'd, and proper for the turner's trade,
Which curious hands may carve, and steel with ease invade."

The ancients prized it very highly for musical instruments, and the word *Buxus*, the name of the tree, also denoted a flute. The town of St. Claude, in France, is almost entirely inhabited by turners, who make from the wood obtained from the trees of the large Boxwood growing in their neighbourhood, rosaries, beads, salad forks and spoons, snuff-boxes, and other articles, which, by various modes of preparation, are made to resemble the beautiful turnery called Tunbridge ware. It was formerly much used both in France and England, for inlaying in other wood.

Arthur Young mentions that in some parts of France the Box was cut down from the mountains, and laid as manure around the roots of the mulberry-trees with very good success. The leaves of the tree are deleterious to animals, and are generally refused by them, though camels sometimes eat them, and die in consequence. They possess sudorific properties, and made into a tincture, they formed a once much celebrated medicine for intermittent fevers. A German empiric, who made this medicine, long kept its ingredients a profound secret, but Joseph II. purchased the recipe at the expense of fifteen hundred florins. No sooner, however, was it ascertained that the medicine was made of box-leaves, than it lost all its repute; its hold on the imagination was gone, and its effects on the sufferer were lost. The

decoction has doubtless powerful sudorific properties, and its taste is slightly bitter. Pieces of the wood of this tree are in France used in brewing, instead of hops; and an infusion of Box is said to strengthen the hair. The honey of Corsica was once believed to have been rendered unwholesome from having been gathered by the bees from the flowers of the Box. Bacon says, "It seemeth there was, in old times, tree honey, as well as bee honey; insomuch as one of the ancients relateth, that in Trebisonde there was honey issuing from the Box-tree, which made men mad." Modern commentators on the classics, however, believe that the noxious honey of Trebisonde was gathered from the rhododendron.

The Box-tree looks very pretty in May and June, when its numerous small greenish-yellow flowers grow among the leaves. We have often wondered that the tree is not more frequently cultivated, for it is an evergreen, and will thrive in most gardens. It must, however, be admitted, that the man who plants it either for use or beauty, can scarcely himself expect to sit beneath its shadow, or to profit by its wood; for it grows very slowly. Its boughs were, in olden times, regularly gathered at Whitsuntide, for decking the large open fire-places of our ancestors; and it was formerly used instead of the willow, on Palm Sundays. An instance of the great antiquity of this practice is given in the Domesday Book, the records of which show that the tenant rendered as part of his payment a bundle of Box twigs, for Palm Sunday. The old custom of each mourner carrying a sprig of Box at a funeral, and throwing it in

the grave, still lingers in the North of England; and Wordsworth, referring to the practice, says:—

> "Fresh sprigs of green box-wood, not six months before,
> Filled the funeral basin at Timothy's door."

In Turkey also, the widow, who goes weekly to pray at the tomb of her husband, plants a sprig of Box at the head of the grave.

The French call this tree *Le Buis;* the Germans, *Der Buchs;* while the Dutch term it *Palm.* It is the *Busso* of the Italians, and the *Box* of the Spaniards.

The dwarf variety of the Box so often seen in gardens,—

> "Where roams the Box along the crisped paths,"

is not known to bear flowers.

Order LXXVII. URTICEÆ.—NETTLE TRIBE.

Stamens and *pistils* on separate flowers, and in some cases on separate plants; *flowers* rarely perfect; *perianth* divided, not falling off, sometimes wanting; *stamens* equal in number to the lobes of the perianth, and opposite to them; *anthers* curved inwards in the bud; *ovary* 1, simple; *fruit* a hard and dry 1-seeded capsule. This order comprises trees, shrubs, and herbs with stipules, some with milky juices, and some with stinging hairs. Though we have but few British genera in this order, yet some very valuable and remarkable exotic plants belong to it, as the Bread-fruit tree, the celebrated Cow-tree of Demerara, and the poisonous Upas of Java.



OMMON HORNWORT
Ceratophyllum demersum

ARMLESS
[illegible]

3 ROMAN NETTLE
Urtica pilulifera

4 SMALL N
U urens

1. Urtíca.—*Stamens* and *pistils* in separate flowers on the same or different plants; *barren flower*, perianth of 4 leaves, stamens 4; *fertile flower*, perianth of 2-leaves, 1-seeded. Name from the Latin *uro*, to burn, from the stings.

2. Parietária (Pellitory).—*Stamens* and *pistils* in the same flower; *perianth* 4-cleft; *stamens* 4; *filaments* at first curved inwards, finally spreading, with an elastic spring; *fruit* 1-seeded. Name from the Latin *paries*, a wall, from its place of growth.

3. Húmulus (Hop).—*Stamens* and *pistils* on different plants; *barren flower*, perianth of 5 leaves; *stamens* 5; *fertile flower* a catkin formed of large concave scales, each of which has at its base 2 styles and 1 seed. Name from the Latin *humus*, rich soil, in which the plant thrives.

1. Urtíca (Nettle).

1. *U. pilulifera* (Roman Nettle).—*Leaves* egg-shaped, or heart-shaped, tapering to a point, with transverse nerves, coarsely toothed; clusters of *fruit* globose, stalked; *seeds* granulate; *root* annual. A variety of this Nettle, the *U. Dodartii* of Linnæus, has egg-shaped, or egg-shaped lanceolate leaves, nearly entire. It is described as growing at Copford, in Essex; Upwell, Norfolk; and Wisbeach, Cambridgeshire; but is probably not truly indigenous. The Roman Nettle is a rare plant in this country, and found about towns and villages, near walls or ruins, or on heaps of refuse. It occurs less rarely on the sea-coast of the eastern counties than elsewhere. It is remarkable for its stalked

clusters of globose fruits. The plant grows on the Denes, near Lowestoft; and a few years since, grew also in the garden of a gentleman residing in the town. Parkinson says, "It hath been found growing of old at Lidde by Romney, and in the streets of Romney in Kent;" but the plant is not now found at all in that neighbourhood. Camden tells us, that the Roman soldiers under Julius Cæsar, having landed at Romney, where they remained some time, sowed there some seeds of the Roman Nettle, which they had brought from Italy. He adds, that having heard much of the coldness of our climate, they thought it was not to be endured without some friction that might warm their blood; they therefore used this nettle to warm and chafe their benumbed limbs. But Roman skins must have been little sensitive if they could derive any comfort from the application, for the stings of this species are far more virulent than those of our common Nettle. It is a tall and large plant, and bears its green flowers from June to August.

2. *U. dióica* (Great Nettle).—*Leaves* egg-shaped and heart-shaped, serrated; *flowers* in axillary spikes, much branched, longer than the leaf-stalks; *seeds* smooth, opaque; *root* perennial. There are few who have not known in early days the pain caused by the sting of the Nettle—few who have not at some time or other had the skin reddened and blotched by its virulence. Both the English and Latin names of this genus refer to these stings, for the word Nettle is but an alteration of the Anglo-Saxon *netel*, which is itself a derivation from *nœdl*, signifying in the same language a needle; while

the Latin name is from *uro*, to burn. The sting of the Nettle is a tubular hair, perforated at or near its extremity, and in its whole structure resembling the fang of a serpent. Its point is extremely hard and brittle, and readily pierces the skin, while at its base, among the cellular substance of the leaf, is placed a gland full of a caustic liquor, which has been ascertained by M. de Candolle, jun. to be of an alkaline nature. As the surface of the skin comes in contact with the point of this hair, and presses it down on the gland, the juice rises through the tubular hair, and entering the skin at the punctured part, causes the pain. The sting is an interesting object beneath the microscope, and in one of the earliest books ever written on that instrument, we find a reference to it. The first compound microscope, consisting of two double convex lenses, seems to have been made by Fontana, a Neapolitan, in 1618; and in 1664 Dr. Henry Power published his "Experimental Philosophy," in three books, containing "New Experiments, Microscopical, Mercurial, and Magnetical." The Doctor desires his readers to look through the microscope at the under side of a nettle leaf, "And then," he says, "you shall find it all full of needles, or rather long transparent pikes; and every needle hath a crystal pummel, so that it looks like a sword-cutler's shop, full of glittering drawn swords, tucks, and daggers, so that here you may autoptically see the causes, as well as you have formerly felt the effects, of their netling. Something like them appear the prickles on Borrage leafs and stalks."

Powerful, however, as are the effects of our own Com-

mon Nettle, yet its virulence is slight when compared with that of the large species of hot climates, the glands of which secrete a greater quantity of a yet more venomous juice. Dr. Joseph Hooker, when in Nepal, remarked that the number of gigantic nettles (*U. heterophýllum*) on the skirts of the maize-fields was quite wonderful, their long white stings looking most formidable. Though their sting produced much pain, yet its effects only lasted half an hour; but he adds, that these Nettles, with the leeches, mosquitos, and other stinging insects, keep the traveller in a perpetual state of irritation. This species, however, was an open enemy, showing to all who would look at it the dangers with which it was beset, and thus deceiving none, reminding us of the old proverb, "Better be stung by a nettle than pricked by a rose;" while another and still more gigantic species was far more dangerous without being so terrible in its aspect. No silvery needle-like stings in this plant arrested the gaze, for its stinging hairs were microscopic, and confined to the young shoots and the stalks of the leaves and flowers. Large masses of this great shrubby Nettle (*Urtíca crenuláta*) grow at Singtam to the height of fifteen feet, having broad glossy leaves. The plant is called in that country *Mealum-ma*, and so great is the dread of the natives regarding it, that this traveller had much difficulty in obtaining their aid in cutting it down. Dr. Hooker says, that he gathered many specimens without allowing any part to touch his skin, still the scentless effluvium was so powerful, that it caused very unpleasant effects for the rest of the day. "The sting," he remarks, "produces violent inflammation,

and to punish a child with *Mealum-ma* is the severest Lepcha threat." Violent fevers and even death have been said to result from the sting of this plant, but Dr. Hooker doubts the truth of this statement. This Nettle has long been known in India; and M. Leschenault, in his "Mémoires de Musée," describes the effects of being stung by it in the Botanic garden of Calcutta. He at first experienced only a slight pricking sensation in the fingers which had come in contact with the plant. In the course of an hour the pain became intolerable, and though there was little to be seen on the skin, yet he felt as if his fingers were being rubbed by a hot iron. The pain finally extended up the whole of the arm, and so affected the lower part of his face as to threaten lock-jaw. He endured this torture through the whole night, after which the pain gradually lessened, though for nine days after he was not wholly free from it. The Nettle of Timor, which is called *Daoun Setan*, or Devil's Leaf, the *U. stímulans*, produces effects which are described as lasting for a year, and which often prove fatal. Dr. Hooker found that the *U. crénulata* only stings at one season of the year, and may be gathered with impunity at any other. He adds, that Endlicher attributes the causticity of Nettle-juice, to bicarbonate of ammonia, which he, as well as Dr. Thompson, ascertained not to be present in this species. The Nettles of Van Diemen's Land are large and virulent. Colonel Mundy says of the *U. gígas*, that it is forty feet high, and its stem nine or ten feet in circumference, while the leaf is as large as that of the dock, and beset with hairs which look like so many shining steel needles. Our own wild nettles may,

with the exception of the rare Roman Nettle, be safely handled if seized courageously, and grasped firmly, but the hand must be passed upwards so as to lessen the pressure upon the stings.

It is some consolation, while thinking of the stinging nature of the Nettles, to remember that they are far from being useless plants. In their dried state they are fed upon by sheep, and growing on the pasture, cows will eat them, especially when herbage is scanty. A recent writer in an agricultural journal remarks, that he has seen Nettles cut up and mingled with wheat-straw as food for horses; and adds, that when thus prepared they furnished as good a food as tares, and that the horses not only throve upon the food, but seemed to like it. The young tops of our common Nettle are boiled and eaten by country people, and have been, in some cases, cultivated for the table; for Walter Scott, who well knew the habits of his countrymen, represents Andrew Fairservice as saying, "Nae doubt I should understand my ain trade of horticulture, seeing I was bred in the parish of Dreep-daily, near Glasgow, where they raise large Kail under glass, and force early Nettle for their Spring Kail." A modern authority in matters of food, M. Soyer, considers that the Nettle makes an excellent dish, and even recommends that it should be gathered and carried into towns for sale. A little butter and gravy are, he says, to be added to the dish, and the vegetable may be eaten with or without poached eggs. We have ourselves in child-hood often supped on a dish of Nettle-tops boiled for about twenty minutes, and eaten with salt and

vinegar. They seemed delicious, but their flavour may have been improved by the fact of their having been gathered during a long country walk, and by our having watched them during the process of cooking. Some similar associations may have added a charm to the Nettle-soup made in the Highlands, and for which we have known a Highland friend to express during illness a great desire, and a lament that no Englishwoman knew how to prepare so pleasant and salutary a dish. It seems that the natives of Siberia have learned the value of the Nettle as food; for Sir George Simpson, in his "Overland Journey round the World," says, when referring to that country, "In the course of my rambles, I saw a good deal of land under cultivation with valuable crops of wheat, barley, oats, rye, potatoes, hops, and flax. I had often heard of Nettle Kail in Scotland, and perhaps eaten of it, but never till I visited the banks of the Lena had I found Nettles artificially grown as greens. At Sitka I had partaken of them dried and preserved, and to my taste they were an excellent vegetable." The foliage of the Nettle is sometimes, in villages, cut up for the food of turkeys; and a rennet made of a strong decoction of Nettles, of which three pints are added to a quart of salt, is often kept in bottles for use. Of this liquid about a tablespoonful is put into a large bowl of milk, which readily coagulates, forming a very pleasant beverage, quite free from any flavour of the Nettle

The Nettle is an astringent, and was of old times much used medicinally; while in country places a decoction of its leaves is still commonly employed as a gargle for sore throats. Dr. Thornton says, that its seeds will cure goitre,

and recommends that about fourteen or fifteen of these ground to powder should be daily taken for this purpose. The plant was also much used as a styptic. Even the stings have proved serviceable in some maladies; and we have the authority of Mr. Purton, an excellent medical botanist, for saying, that a nettle leaf pressed against the roof of the mouth is very efficacious in stopping the bleeding of the nose; and that this leaf, producing as it does a considerable irritation on the skin, has been employed as a rubefacient, and found of use in restoring torpid or paralytic limbs; a mode of treatment which is termed urtication. We have seen these leaves placed in the baskets of plums gathered in the Kentish orchards, and been told by the fruit pickers, that this manner of packing best preserved the "bloom" on the plums. In the same way, the gardeners pack grapes for the London market with the leaves of cucumber; and doubtless the reason in both cases is, that while the leaf preserves the coolness of the fruit, it is kept from too close a contact, by the numerous hairs on the surface. The roots of the plant boiled with alum will dye wool of a good yellow colour. The juice is also useful for stopping the leakage of wooden vessels. Before the rents are large, they should be well rubbed with handfuls of the leaves, and the juice entering into the small crevices, soon coagulates so as to prevent the escape of the contents of the vessel. The rubbing must be continued more or less, according to the shrinking of the wood, and in a few minutes a very successful result is produced by the process. In Sweden, large quantities of Nettles are planted in rows as food for cows.

The fibres of the Nettle are so tough and strong, as to be scarcely inferior to those of the Hemp. They are commonly, in the North of Europe, woven into cloth, and cordage; and those of one plant of the family are made into that beautiful muslin now so much prized as Nettle-cloth. This is produced from the *Urtica nivea* of Linnæus, a plant which is the *Bohmeria nivea* of modern botanists. Its fibres have, from time immemorial, been used in China for the manufacture of this delicate fabric, which is well known also all over India, and is about the texture of fine cambric; making excellent clothing for hot countries. The fibres are also wrought into sewing thread, and as they will take a rich dye, they are used for a variety of ornamental purposes.

Nettle-fibre has been long used in Siberia, in making paper, and a very superior paper has been manufactured in Germany from this material. In the present paper difficulty, it has also been tried in England, but the fibre is considered very inferior to that of linen, hempen, or woollen rags for this purpose. Almost any fibrous substance may be made into paper, but it may be either too weak, or brittle, or spongy, or it may be badly coloured; while in many cases the cost of procuring and preparing the material renders it too expensive. Jacob Christian Schäffer, the pastor of Ratisbon, who about eighty years since published a little book on the manufacture of paper, printed its contents on paper made of various materials. The barks of the willow, aspen, beech, hawthorn, lime, and mulberry, all contributed their fibres; while the silky down of willows and poplars, and the tendrils of the vine, as well as

mosses, lichens, nettle-stalks, fir-cones, reeds, and even saw-dust, were used by the enthusiastic Schäffer; and among them all, it is probable that the Nettle fibre proved one of the best materials for his purpose. None of his papers, however, are suited to the taste of our day, when readers and writers have been so long accustomed to paper of a superior description.

Our Nettle leaf is said to be poisonous to frogs, but to the insect world it is a large source of food. The caterpillars of some of our loveliest summer and autumn butterflies feed upon it. The pretty little Tortoiseshell butterfly (*Vanessa Urticæ*), takes its name from the plant; and the greenish-black caterpillar with yellow stripes, and spiny as the nettle itself, feeds upon the plant before it is clad in its black wings, spotted with orange, and bordered by blue crescents. During June and July, we often find on the nettle the greenish-black spiny caterpillar which will one day emerge in the form of the beautiful Admiral butterfly (*Vanessa Atalanta*); and, rolled up in a little home which he has woven of silken threads, by drawing together the edges of the Nettle-leaf, he eats from the walls of his own dwelling till it is no longer habitable. But the next Nettle-leaf will serve him for another home till, clad in all the glory of his wings of black and scarlet, he wends his way to the flowers around. Not far distant we may sometimes find the shining black caterpillar, whose coat is studded with white points, and who is regaling himself on the Nettle-leaf, while awaiting the purplish wings with their radiant spots, which shall make him known to all beholders as the Peacock-butterfly (*Vanessa Io*).



1 PELLITORY OF THE WALL.
Parietaria officinalis

2 HOP
Humulus lupulus

3 COMMON [illegible]
[illegible]

4 BROAD LEAVED [illegible]
[illegible]

The Common Nettle grows all over Europe, about ruins and in hedges, as well as in neglected fields and pastures, marking "the field of the slothful," described by the wise man; though, as Shakspeare has said—

> "The strawberry grows underneath the nettle,
> And wholesome berries thrive and ripen best
> Neighbour'd by fruit of baser quality."

It is sometimes three feet high, and bears its greenish spikes, often tinged with purplish brown, from May to October. The French call it *L'Ortie;* and the Germans, *Die Brennessel.* It is the *Brandenetel* of the Dutch, the *Ortica* of the Italians, and the *Ortiga* of the Spaniards.

3. *U. úrens* (Small Nettle).—*Leaves* opposite, elliptical, serrate; *spikes* axillary, nearly simple, two together, shorter than the leaf-stalk; *seeds* smooth, opaque; *root* annual. This species is readily distinguished from our other Nettles by its smaller size. It is rarely more than a foot high, and its foliage is of a brighter green than that of the common species. The small Nettle bears its green flowers from July to October, and springs up abundantly by the borders of fields and meadows, in churchyards and neglected gardens. Though decidedly a stinging Nettle, it is not so powerful as the larger species.

2. Parietária (Pellitory of the Wall).

1. *P. officinális* (Common Pellitory).—*Leaves* oblong, oval, or egg-shaped, lanceolate, narrowed at both ends, 3-nerved above the base; *involucre* of two 3—7 lobed segments, with an alternating bract, 3—7 flowered; *flowers* sessile, that between the segments with a pistil

only, one only on each segment containing both stamens and pistils, at length tubular, coloured, and longer than the stamens; the others, if present, barren, bell-shaped, and short; *root* perennial. In one form of this plant the stems are generally spreading, but in a less common variety they are quite erect. The Wall Pellitory is a much branched herbaceous plant, with narrow hairy leaves, and reddish brittle stems. Its small hairy flowers grow throughout the summer in the axils of the leaves, and are of a reddish hue, and the filaments are jointed and elastic. They are remarkable for their irritability, for if touched with a needle before the expansion of the flower, they suddenly fly open with considerable force, and scatter their pollen.

The plant grows often on ruins, churches, and old walls—

> "Where the Abbey's height appears,
> Hoary 'neath a weight of years,
> Where the mouldering walls are seen
> Hung with Pellitory green;
> Where the steeple's taper stretch
> Tires the eye its length to reach,
> Where the Cross, to Time resign'd,
> Creaking harshly on the wind,
> Crowning high the rifted dome,
> Points the pilgrim's wish'd-for home."

It is found, besides, on sea-cliffs. It contains in its juices so large a quantity of nitre, that, in preparing an extract from the plant, the mass has sometimes taken fire. It is a favourite village medicine, and one of old renown, yet its sanative properties are really very slight, though the decoction is somewhat cooling.

Chaucer refers to it—

> "His forehead dropped as a stillatorie,
> Were full of Plantaine, or of Paritorie."

Farmers often place this plant among heaps of corn infested by weevils, and it is believed quickly to rid the grain of this destructive insect. The herb was formerly called Wall-wort. Gerarde says, "Some call it *Perdiceum* of partridges, which sometimes feed hereon; some *Urceolarius* and *Vitraria*, because it serveth to scoure glasses, pipkins, and such like. In Spain they call it *Yerba del muro*." He adds, that it is good for coughs. The French term the plant *La Pariétaire*, and the Germans, *Das Glaskraut*. It is the *Glaskruid* of the Dutch, and the *Noc i dzien* of the Poles. Mr. Curtis remarks of this herb, that the same degree of cold (31° Fahrenheit) which strips the mulberry of its leaves, will destroy the herbage of the Pellitory.

3. Húmulus (Hop).

1. *H. Lúpulus* (Common Hop).—*Stems* rough, long, and twining; *leaves* opposite, stalked, 3—5 lobed, serrated, veiny, rough; *fertile flower* in a catkin; *barren flower* of 5 segments and 5 stamens; *root* perennial. Those who have dwelt or travelled in any of our hop counties, as Kent, Sussex, or Hereford, in the autumnal season, need not be reminded of the beauty of the hop-garden, or of its delicious fragrance. We have in our summer walk many sweet scents wafted to us by the breeze from honeysuckle hedges and flowering bean-fields, from the hay lying outspread on the meadow,

from blossoming broom and briar roses, or stronger still, from fields of lavender, which spring up to reward the grower's toil; but not one of the summer odours can equal that which, in September and October, fills the hop-garden with incense, and may be enjoyed long ere we approach its bounds. It is a picturesque scene, too, when the tall plant, covered with its golden cones, is gathered by the hop-picker, and when we may see men, women, and little children, working beneath the blue sky at their employment, while the cradled infant sleeps the sounder from the soothing influence of the hops which hang over its head. The toil is not a wearisome one, and is lightened by the pleasant air and social intercourse, while often among those pickers may be found some one who has come hither from the distant town to seek the long-lost health, and has found it here.

Though the Hop under cultivation has several varieties, and the grower in Kent, Sussex, and Surrey, talks with enthusiasm of his Goldings, or White-bines, or Grapes, or Colegates, yet these have all originated from one species. Some botanists doubt whether the Hop is really wild, and is not rather to be regarded as a plant long since naturalized in this country; but Mr. Babington, and many others, consider it as a true native in many parts of England, and Dr. Bromfield thinks it indisputably indigenous to the southern counties. In many parts of the kingdom, as in Kent, the wild Hop twines luxuriantly in woods and hedges, interlacing the shrubs with its long stems, and hanging among their boughs its wreaths of large rough leaves, and its fragrant cones. These are smaller, and of a paler yellowish green hue than

those of the cultivated Hop. They grow in little clusters during July, August, and September, while the barren flowers, which are of the same greenish tint, resemble the blossoms of the currant-bush in form, but are not nearly so numerous in the cluster. That the cultivated Hop was brought into the hop-gardens of this kingdom from the Low Countries, or from Artois, in the reign of Henry VIII., is a well-known fact, and as the two old lines record—

> "Hops, Reformation, Bays, and Beer,
> Came into England all in one year."

But there is no evidence to show that the wild plant was not then in our hedges. Our English name of the plant is derived from the Anglo-Saxon *hoppan*, to climb, and is very expressive of its habit. It is called also *Hopffen*, in Germany; and *Hoppe*, in Holland.

In the "Promptorium Parvulorum," or Anglo-Latin Dictionary, we find the word *Hoppe* described as "sede for bere;" and the learned Editor, Mr. Albert Way, remarks on this:—"It should seem that the *Eala* or *Swatan* of the Anglo-Saxon was not compounded with any bitter condiment, which was essential to the concoction of beer, a drink of Flemish or German origin, and, until the sixteenth century, imported from the Continent, or brewed by foreigners only in this country. The Promptorium gives, Bere, *cervisia hummulina*, as distinguished from ale, which was not hopped. Caxton, in his 'Boke for Travellers,' speaking of drinks, makes the distinction, 'Ale of England, Byre of Alemayne;' and it appears, by the 'Customs of London,' Arnold's Chronicle, 87, that beer was first

made in London by 'byere brewars, straungers, Flemyngis, Duchemen,' &c. A recipe for making single beer with malt and hops is given p. 24. It has been asserted that the use of hops was forbidden by Henry VI. in consequence of a petition of the Commons, mentioned by Fuller in his 'Worthies,' under Essex, against the 'wicked weed called hops,' but no record of the prohibition has been found, and the petition does not appear in the rolls of Parliament." It is well known that in the time of Henry VIII., and for many years later, a prejudice was entertained against hops; and Evelyn laments that their use was "transmuting our wholesome ale into beer." In 1531, when "sundry misuses" in the royal household were considered to need reform, an injunction was given to the brewer not to put any hops or brimstone into the ale. Mr. Way remarks, "Bullein, in the 'Bulwarke of Defence,' written about 1550, speaks of hops as growing in Suffolk. They are mentioned in the Statutes of Edward VI. 1552, as cultivated in England. Among the privileges conceded to the strangers from the Low Countries who settled at Stamford in 1572, is a clause regarding the free exercise of husbandry, in which are specified hops, and all things necessary to gardens." Some of our early proverbs also refer to the plant. Thus—

> "Till St. James's day be come and gone,
> There may be hops, or there may be none."

Hop-gardens, by the name of *Humolariæ*, are alluded to in a document of the Carlovingian dynasty in the early part of the ninth century, and frequently in documents of the thirteenth.

The word *humulus* is said to be derived from *humidus*, wet, or *humus*, fresh or damp earth, because the plant flourishes in moist lands; for, as Gerarde observes, "The Hop joyeth in a fruitful soil." Thus Tusser, who published his volume in 1551, the "Five good Pointes of Husbandrie," says:—

"Choose soil for the Hop of the rottenest mould,
Well doonged and wroght, as a garden-plot should;
Not far from the water (but not overfloune),
This lesson well-noted, is mete to be knowne:
The sun in the south or else southlie and west,
Is joy to the Hop, as welcomed ghest,
But wind in the north, or else northerly east,
To hop is as ill as a fray in a feast.

"The Hop for his profit I thus do exalt,
It strengtheneth drink and favoureth malt;
And being well-brewed, long kept it will last,
And drawing abide if ye draw not too fast."

Pliny tells, that the word *Lúpulus* was a corruption of the old name of the plant, *Lúpus salictárius*, the Willow Wolf; and that it was so called because it destroyed the willows by twining among them. Some writers have thought that it was taken from the word *lupínus*, as it is well known that the Egyptians used the lupin seeds to give a bitter flavour to their beer. Beckmann says, that neither the word *húmulus* nor *lupínus* is of great antiquity.

The Hop grows in the hedges of most European countries, often climbing about trunks of trees to the height of twenty or thirty feet; and the French call it *Houblon;* the Italians, *Lupolo;* the Spaniards, *Hombrecillo;* and the Russians, *Chmel.* On the island of

Chusan, on the Chinese coast, the Hop is extraordinarily abundant; and Gutzlaff's inquiries have established it beyond doubt to be indigenous. Cantor saw, in a tea plantation, a tea-tree around which was entwined a Hop plant, which afforded shadow to the Common Wormwood, the Perforated St. John's-wort, and the Dog-violet, while in its neighbourhood grew raspberries and strawberries, and the oak raised its sturdy arms beside the plantain. Some of the hops used in this country are introduced from abroad, and during the last few years many have been imported from Bavaria, and obtained a high repute.

The opinion of our forefathers that hops "would spoyle the taste of drink and endanger the people," has long since passed away. Lupulin, or the principle of the Hop, is now known not only to impart an agreeable and aromatic flavour to beer, but also to possess tonic and soporific properties, as well as to prevent, by arresting fermentation, the liquor from becoming sour. The narcotic properties of the Hop have a soothing effect; and Hop pillows have long been in use in cases of sleeplessness, nor can we spend many hours in the Hop-garden without being conscious of this effect of the fragrance. The young tops of the wild Hop are gathered, tied in bundles, and boiled; and we know from long experience, that they form a pleasant vegetable, which is often compared to asparagus, though not much resembling it in flavour. The stalk and leaves dye wool of a yellow colour; and the fibres of the stalk, which in Sweden are made into a strong cloth, and a coarse sacking, have been recommended as likely to afford

a good material to the paper manufacturer. The roots are doubtless tonic, and are considered by some good botanists to be equal to sarsaparilla in their medicinal powers. The old herbalists considered the juice of the Hop of great value as a purifier of the blood, and they made of the plant distilled waters and juleps, which they regarded as highly beneficial. The leaves are often clammy to the touch, and the author has been informed by Mr. F. A. Paley, that the viscid and bitter juice in the Hop clusters will cause serious inflammation if the skin is abraded. This gentleman saw a person whose arm was completely disabled by having been thus poisoned in Hop-picking.

Order LXXVIII. ULMACEÆ.—THE ELM TRIBE.

Stamens and *pistils* in the same or different flowers; *perianth* bell-shaped, often irregular; *stamens* equalling in number and opposite to the lobes of the perianth; *ovary* not attached to the perianth, 2-celled; *styles* and *stigmas* 2; *fruit* 1 or 2-celled, not bursting, drupe-like, or furnished with a leafy border; *seed* pendulous. The Order consists of shrubs or trees, with rough stipuled leaves, and flowers in clusters, often important for their use as timber.

1. Úlmus (Elm).—*Perianth* bell-shaped, 4—5 cleft, persistent; *stamens* 5; *styles* 2; *capsule* thin and leaf-

like. Name considered by Sir W. J. Hooker as derived from the Hebrew *ul*, to be strong or vigorous.

1. Úlmus (Elm).

1. *U. suberósa* (Common Elm).—*Leaves* tapering to a short point, more or less doubly serrate; *flowers* small, 4—5 cleft; *segments* fringed; *fruit* inversely egg-shaped, deeply cloven; *seed cavity* chiefly above the middle of the fruit, and near the notch; *root* perennial. Several varieties of this tree occur in Great Britain; in one the leaves are rough above and downy below, and small, being from one to three inches long, and this form is common throughout England. In the *Ulmus májor* of some writers, a variety found in the neighbourhood of London, the leaves, fruit, and flowers are much larger, and from two and a half to five inches in length, and rough above and downy below; while in a form often described as *U. glábra* the leaves are somewhat leathery, shining, smooth or slightly rough above, and smooth except in the axils of the veins, beneath; the young leaves, stipules, and fruit have scattered glands, and the branches are drooping. This form occurs chiefly in the South of England, while a variety similar to it in other respects, but having its branches rigid, erect, and close, is sometimes described as *U. stricta*. It is found in Cornwall and North Devon. The stately Elm is an early leafing tree, yet its twigs are sometimes darkened by its innumerable flowers long before its leaf-buds have unfolded. These flowers are at first enveloped in scale-like buds, and the young twigs are thickly beset with them. They expand in March, and disclose the purple

calyx with stamens of the same hue, and a cleft germen bearing two styles. The tree seems covered with these flowers almost as thickly as it is afterwards clothed with leaves; and as the flowers wither, they are succeeded by the thin, membranous, notched seed-vessel, and the enclosed seed is borne, as on a wing, by the wild winds of early spring to the distant soil, or scattered by hundreds around the trunk of the tree. Clusters of these flat seed-vessels so invest the tree, that they look at a distance like foliage, yet the leaves do not come till the seeds are nearly ripe; but in April the tender green leaves shoot out from the leaf-buds, and the boughs are clothed in a mantle of lively green, as Bishop Mant has said:—

"For lo! by May's bright touch are seen,
Colour'd with varied tints of green,
Now deep, now dark, now pale and light,
Now almost fading into white,
Now brightening to a mellow'd shade,
The yellow bright, or russet red,
The offspring of the woodland realm;
The glossy Beech, the rougher Elm,
The waving Birch-tree's silver bark,
And pallid Lime, and Alder dark,
Maple and Willow's countless race,
Which clothed their forms with chequer'd grace
Of leafy garb before, have now
From stem to crown, each branch and bough,
Light twigs and open'd spray array'd,
With depth and plenitude of shade."

But though there are differences of hue in the foliage of May, yet these are not striking as in the later year. It is in the autumnal season that the Elm seems most beautiful, for its sere and yellow leaf has a tint of its

own, differing from the yellowish brown of the Oak, the golden hue of the Maple, the reddish or yellow tint of the Willow, and the rich rust-coloured tinge of the Beechen boughs. It is a large tree, one of the tallest to be seen on our English landscape; and its foliage, though rich and full, hanging so loosely as to form a chequered shade by the light which comes down between its dark masses. Its trunk is usually erect, and so rough, that Gray's epithet of the "rugged Elm" is very appropriate. The young branches are hairy; but, as they grow older, they become covered with the cracked rugged excrescence to which the species owes its name. The tree attains a great age, and when growing in a good soil it will live for five or six hundred years, and even then furnish good timber. Its wood is strong and close-grained, and being uninjured by water, is used in ship-building; the inner bark is made into bast, mats, and ropes, and in former times the foliage served as fodder for cattle; a purpose to which it is still applied on the Continent. The leaves remain long on the tree, but in autumn are often marked with dark spots. The winter winds strew the leaves over the ground, and then the spot increases till it bursts open and reveals the cause of the decay to be a minute fungus. Galls are also produced on the leaves by the puncture of a cynips, and each gall contains some drops of liquid, which has been called Elm balm, and used in the cure of wounds. The Elm, indeed, is liable to the attacks of many enemies in the insect world, from the Elm-destroying beetle, which feeds on the inner bark, and in order to reach it pierces through the external covering, and

gathers there in thousands, down to the Elm-flea, which, in its brilliant coat of green and gold, skips among the foliage, and devours the leaves with great rapidity, and which, aided by other insects, sometimes so injures a goodly Elm that it looks like a blighted tree.

The Elm has been celebrated by poets, both ancient and modern; for many have told, like Chaucer, of—

"The Elmis great and small."

The ancients twined their vines around the Elm trunks, and he who reared a vineyard was as careful of his Elms as of his vines. This "wedding of the Elm to the Vine" was a source of continual allusion among the Roman poets; and his classic lore suggested it to Milton, when describing the pleasant occupation of our first parents—

"They led the Vine
To wed the Elm; she, spoused, about him twines
Her marriageable arms, and with her brings
Her dower, the adopted clusters to adorn
His barren leaves."

Many very picturesque Elms are found in the neighbourhood of London, and other large towns; for this tree will bear an atmosphere which is unsuited to many others; and the magnificent Elms of Hyde Park and Kensington Gardens are highly prized by those who dwell in the crowded neighbourhood, affording, as they do, a welcome shadow. Thousands could say, with Milton—

"Not always city-pent nor pent at home
I dwell; but when Spring calls me forth to roam
Expatiate in our proud suburban shades
Of branching Elms that never sun pervades."

Scattered over our country, too, are numerous Elms, interesting from their old associations. Mr. Jesse mentions that one of the Elm-trees standing near the passage leading into Spring Gardens was planted by the Duke of Gloucester, brother to Charles I.; and that, as the hapless monarch passed it on his way to Whitehall on the morning of his execution, he pointed out the tree to one of his attendants. The Elm at Chipstead Park, in Kent, is remarkable for its great age and size, being sixty feet high, and having a base twenty feet in circumference. The Gospel Elm at Stratford-upon-Avon once served as a parish boundary, beneath whose shadow were read and sung those portions of Holy Writ which our fathers used in the Processions of Rogation-Day, reminding us of Herrick's lines—

> "Bury me
> Under that Holy Oke, or Gospel tree,
> When, though thou see'st not, thou may'st think upon
> Me, when thou yearly go'st Procession."

Many compound names of places of which Elm forms a part are to be found in Domesday Book, the drawing up of which was concluded in 1068; and many well-known names yet seem to hint at the existence in olden times of Elms in their neighbourhood. We have Elm in Cambridgeshire and in Somersetshire; and Elmbridge, Elmdon, Elmer, Elmstead, Elmhurst, Elmham, and Elmington, in various parts of the kingdom; yet the common Elm is, by many writers, not considered indigenous, and the small-leaved variety, which is found principally in Norfolk and Sussex, and which yields

better wood than any other of our Elms, is said to have been introduced from Palestine by the Crusaders.

Our fathers drew from the leaves and roots of the Elms medicines for various disorders; both these and the bark have an astringent property, and are somewhat mucilaginous; while the chemists of modern days detect in them gallic acid and supertartrate of potash; and Klaproth obtained from the inner bark a peculiar principle called Ulmine. The decoction of Elm bark, used both as a lotion and internal medicine, has considerable repute as a remedy for diseases of the skin, and it was regarded in old times as "certainly very effectual to cleanse the skin and make it fair," while the water in which the root was boiled was used to prevent the falling of the hair. Our ancestors were accustomed to bruise the leaves also, and lay them upon wounds; and the ground bark was considered a useful application to the gouty limb. The inner bark of the Elm is, in the North of Europe, commonly reduced to powder, and, mixed with meal, made up into bread; but it affords very little nutriment. The leaves were formerly much used in adulterating tea, and silkworms have been fed upon them. Though the bark of this tree is very similar to that of the Cork-tree, yet it is not adapted, either in quantity or quality, for being used instead of that material. The ashes of the Elm are rich in alkaline salts; and the knobs which grow on old trees are used by the cabinet-maker for ornamental furniture. The Elm timber being durable in water, is particularly suited for making water-pipes and piles for piers and bridges.

2. *U. campéstris* (Broad-leaved Elm, Wych Hazel, or Wych Elm).—*Leaves* tapering much at the point, doubly serrated, usually rough above, and downy beneath; *flowers* 5—7 cleft; *lobes* fringed; *fruit* oblong or roundish, notched; *seed-cavity* chiefly below the middle of the fruit, and distant from the notch; *root* perennial. This species is by some writers called *U. montána*, but is the *U. campéstris* of Linnæus, and is distinguished by the relative position of the seed-cavity and the notch of the fruit; it has also very spreading branches; its leaves, which are broad, and somewhat like those of the Hazel, appear just as the hop-like fruit is matured. The tree is not so upright as the Common Elm; and there is a variety called the Weeping Elm, in which the branches are pendulous. The flowers of this species appear in March and April. They are larger and paler in tint than those of the Common Elm, are arranged in looser tufts, and cut into five or six oblong acute segments of a purplish colour, with dark purple anthers.

The Wych Elm is common in woods and hedges, and is undoubtedly wild; and being the only species indigenous to Scotland, is often called Scotch Elm. It is a native of the northern and temperate parts of Europe, and grows to a great age, the "Century-living crow" often building among its boughs. As Thomson wrote—

> "Should I my steps turn to the rural seat
> Where lofty Elms and venerable Oaks
> Invite the rook, who high amid their boughs
> In early spring his airy city builds,
> And ceaseless caws amusive."

Gerarde says that it was in his day commonly called Witch Hazel, and he adds, "Old men affirm, that when long bows were in use, many were made of this tree, for which purpose it is mentioned in the English Statutes." Roger Ascham, however, did not recommend the wood for this purpose. The timber of this tree is very valuable, and is by some writers on Naval Architecture considered as scarcely inferior to that of the Oak.

The lovers of picturesque scenery may welcome this Elm on the landscape, with its loosely hanging boughs, clad with masses of foliage, full enough for richness, but not so crowded as to form a heavy outline. It has a bold and sturdy trunk, often covered with excrescences; and there is an ease and grace in its boughs, and a beautiful greenness or autumnal brown in its tint, which render it truly picturesque. Its bark is of a lighter hue than that of the Common Elm, and the tree rather resembles the Oak in form. It grows more rapidly than the Common Elm; hence its timber is somewhat less valuable. Its seeds ripen in June. It flourishes in Scotland, not only in the plains and valleys of the Lowlands, but is hardy enough to brave the winds on the mountain steeps in the remotest Highlands, though it does not there attain a great size.

Several very large and handsome Wych Elms are well-known objects of interest. At Pollock, in Lanarkshire, are very fine trees, one of which was, about fifteen years since, ninety feet high; and Wych Elms in this kingdom have been recorded as growing to the height of one hundred and twenty feet.

The origin of the name of this tree is unknown; but it appears that several Elms, as well as this species, were in former days called Wych Elm; and it has been surmised that our Saxon ancestors so named them because Elms might have grown near their salt springs, which they called wych or witch. It is probable that the similarity of the word to that of witch led to some popular superstition connected with the tree, for dairy-maids in the midland counties of England still gather a bough of this Elm and place it in the churn, that the milk may the more readily turn into butter.

Order LXXIX. ELÆAGNEÆ.—OLEASTER TRIBE.

Stamens and *pistils* on separate plants; *barren flowers* in catkins; *perianth* tubular; *stamens* 3—8, sessile on the throat of the perianth; *fertile flower* solitary, tubular, not falling off; *ovary* 1-celled; *style* short; *stigma* awl-shaped; *fruit* a single nut enclosed within the fleshy perianth. The Order consists of trees or shrubs without stipules, but often covered with scurfy scales. The fruits of several species are eaten in the East, and the plants are found throughout the northern hemisphere.

1. Hippóphaë (Sea Buckthorn).—*Barren flowers* in small catkins; *perianth* of 2 valves; *stamens* 4, with very short filaments; *fertile flowers* solitary, perianth



1 SALLOW THORN
Hippophaë rhamnoides

2 WILLOW GALL
Myrica gale

3 BIRCH
Betula alba

4 DWARF BIRCH
Betula nana

5 ALDER
Alnus glutinosa

tubular, cloven at the summit; *style* short; *stigma* awl-shaped; *fruit* a 1-seeded nut. Origin of name uncertain.

1. Hippphóhaë (Sea Buckthorn).

1. *H. rhamnóides* (Sea Buckthorn, Sallow-thorn, or Willow-thorn).—*Leaves* linear-lanceolate; *flowers* small, greenish; *root* perennial. Those accustomed to walk in gardens near the sea, are familiar with this plant, for it often combines with the tamarisk to give greenness and shelter to the beds visited by rough and bleak winds. When cultivated, it sometimes becomes almost like a tree, with a thick woody trunk, twenty feet high, and numerous irregular branches; but when growing wild on the sea-cliffs and sandhills about our coast, it is usually a thorny branched shrub, not more than three or four feet in height. It is scarcely indigenous to Scotland, but occurs in various places on the English coast from Kent to Yorkshire; and on some, as on the south of Kent, it is common. It grows on the sands of Deal, and on the chalk both east and west of Dover, and near Folkestone, while on the opposite coast of Calais it is most abundant. It is very plentiful, too, on the flat sandy line between Cromer and Yarmouth, in Norfolk, and is more or less frequent throughout Europe and Northern Asia. Though growing above the level of the tide-mark, yet it will bear an occasional dash of spray; and on some of our shores, and still more frequently on those of the Continent, it is planted with the sea-side grasses for the purpose of holding down the shifting sands, and is most useful in this

respect. The small, solitary, greenish, pistil-bearing flowers are tubular in form, and the barren flowers are placed in small cones, each scale bearing a flower. They expand in May, just before the bursting open of the leaves, or at about the same period. The narrow leaves are deep green on the upper surface, and white beneath; while some of the boughs are of a silver colour, their shining surfaces looking almost metallic. In the Crimea the Buckthorn is planted, not only to bind the sands, but also that it may shelter the young fir-trees which are placed near it; and the Buckthorn there acquires great size and vigour. In Germany, where it grows well, cultivated plants are commonly twenty feet high; and a Sea Buckthorn which was planted at Syon, in the environs of London, attained the height of thirty-three feet, and had a trunk whose diameter was eleven inches.

The berries of this shrub grow in numerous clusters among the leaves in September; they are rather larger than holly-berries, sometimes of a deep orange, at others of a much paler yellow, and they have a pleasant acid flavour. They are seldom eaten in this country, even by children, owing to the idea that they are unwholesome, yet they are perfectly harmless. The Tartar children eat great numbers of these fruits; and a preserve made of them, and served up with milk or cheese, is regarded in Tartary as a luxurious dish. The fishermen of the Gulf of Bothnia also make of these fruits a pleasant acid jelly, which they take with their fish, and a kind of fish sauce is made from them in the South of France. In Dauphiny, as well as in Spain, they are, however, believed to be poisonous; and at Calais, where the

Buckthorn is abundant on the sands, the fishermen refuse to touch the fruits, which they say, however, are greedily devoured by the sea-fowl. J. J. Rousseau relates an amusing anecdote respecting this plant. While botanising in the neighbourhood of Grenoble with a local botanist, he found this shrub, and gathered and ate the berries which were on its boughs. His companion, who regarded them as poisonous, was too polite to say so to one whom he deemed so leaned; but he afterwards confessed, that while seeing these fruits eaten plentifully by Rousseau, he thought that death would certainly ensue. The land as well as sea-birds make many meals of the berries, which continue on the shrub throughout the winter, and which, if untouched by birds, may be seen even in the early spring just when the spikes of buds are thickening on the bough.

The French call this shrub *L'Argoussier*; and the Germans, *Der Haftdorn*. It is the *Duinbessen* of the Dutch, the *Espino amarillo* of the Spaniards, and the *Rakitnik* of the Russians. Every part of the plant abounds in a colouring matter, which is used as a yellow dye. A kind of Sphinx, called *Deiléphila hippóphæa*, which feeds on this Buckthorn, was formerly a very rare insect, till the peasantry who dwell near the Arve, along whose course the plant grows in profusion, collected and reared a large number of these insects. The following lines were written for our volume by Calder Campbell :—

"October winds were drifting yellow leaves
From wintering trees,—October waves rose high
Against the barren shores of Calais, where

I stood and mark'd the stormy sea that frown'd
'Neath frowning skies. 'Is there no hope?' quoth I,
'No sun to gild the darkness? No smooth spot
In all those waters? No green bud amidst
Those arid sands to talk of Hope to me?'
Lo, at the thought, as if enchantment call'd,
A bird shook music from its eloquent wings—
A ray of light slanting through sombre cloud
Danced o'er the billow like a starry thing
That loves to soothe and cheer; and at my foot
Began a track of green sharp-bladed grass,
'Midst a dwarf forest of thick shrubs, that bore
A fruitful harvest in the swelling sands:—
Of darkest green, the lanceolated leaves
Show'd yet a silver lining when the wind
Stirred up the bushes, and the polish'd bark
Gleam'd whitely with metallic lustre, smooth
As lady's hand; although the branches bore
An ample armour in exuberant thorns
That dared the pilfering hand—for beauty there
Profusely dwelt in glowing fruit, that deck'd
The branching stalks with orange berries, bright
Glittering like amber beads, sown thick and rich
Upon dark sculptured foliage, deftly carved,
In some cathedral aisle. Oh cheering sun
O'er gloomy waves! Oh merry bird, to sing
In chilly skies! Oh sparkling Sallow-thorn,
To dress the naked sands of Calais thus
In fruity splendour—ye have given to me,
Wandering, and sick, and lone, fresh stores of hope!"

Order LXXX. AMENTACEÆ.—CATKIN-BEARING TRIBE.

Stamens and *pistils* in separate flowers, and often on different plants; *barren flowers* in heads or catkins, composed of scales; *stamens* 1—20, inserted in the scales; *fertile flowers* clustered, solitary, or in catkins; *ovary* usually simple; *stigmas* 1 or more. This Order consists of shrubs, and of some very valuable trees. It is divided into several Sub-Orders or Groups, and four of these Groups contain British species. The first Sub-Order, Myriceæ (Sweet Gale Group), has its flowers in catkins, and its ripe fruit assumes a drupe-like form, from being surrounded by the fleshy scales of the catkins. In Betulineæ (the Birch Group), the flowers are all in catkins, and the fruit is thin, flattened and dry, 1-celled, and containing one or two seeds without downy tufts. In Salicineæ (the Willow Group), all the flowers are in catkins; the fruit is a 2-valved capsule, and the seeds are tufted with down; while in the Cupuliferæ the fertile flowers are in tufts or spikes, the barren flowers in catkins, and the fruit is either entirely or partly enclosed in a bony or leathery case, termed a cupula.

Sub-Order I. Myríceæ.—Sweet Gale Group.

1. Myríca (Sweet Gale).—*Stamens* and *pistils* on different plants; *scales of the catkin* concave; *stamens* 4—8; *stigmas* 2; *fruit* drupe-like, 1-seeded. Name in Greek synonymous with the Tamarisk.

Sub-Order II. Bétulineæ.—Birch Group.

2. Bétula (Birch).—*Stamens* and *pistils* in separate flowers; *scales of the barren catkins* in threes; *stamens* 10—12; *scales of the fertile catkin* 3-lobed, 3-flowered; *stigmas* 2; *fruit* flattened, 1-seeded, winged. Name said, by Sir W. Hooker, to be from *betu*, the Celtic name for the Birch.

3. Álnus (Alder).—*Stamens* and *pistils* in separate flowers; *scales of the barren catkin* 3-lobed, 3-flowered; *stamens* 4; *scales of the fertile catkin* 2-flowered, permanent, becoming hard and dry; *stigmas* 2; *fruit* flattened, not winged.

Sub-Order III. Sa'licineæ.—Willow Group.

4. Sálix (Willow).—*Stamens* and *pistils* on different plants; *scales of the catkin* overlapping each other; *stamens* 1—5; *stigmas* 2; *capsule* of 2 valves, 1-celled; *seeds* numerous, with downy tufts. Name said by Theis to be from the Celtic *sal*, near, and *lis*, water.

5. Pópulus (Poplar).—*Stamens* and *pistils* on different plants; *scales of the catkin* jagged; *stamens* 4—30; *stigmas* 2, 2—3—4-cleft; *capsule* of 2 valves; *seeds* numerous, with downy tufts. Name from the Latin *pópulus*, or the tree of the people.

Sub-Order IV. Cúpuliferæ.—Mast-bearing Group.

6. Fágus (Beech).—*Barren flowers* in a globose catkin; *stamens* 5—15; *fertile flowers* 2 together, within

a 4-lobed prickly involucre; *stigmas* 3; *nuts* 3-cornered. Name in Greek, *phegos*, a species of oak.

7. Castánea (Chestnut).—*Barren flowers* in a long cylindrical catkin or spike; *stamens* 10—20; *fertile flowers* 3 together, within a 4-lobed very prickly involucre; *stigmas* 3—8; *nuts* 1—3 together, within the enlarged prickly involucre. Name from Castanea, in Thessaly.

8. Quércus (Oak).—*Barren flowers* in a long drooping catkin; *stamens* 5—10; *fertile flowers* with a cup-shaped scaly involucre; *stigmas* 3; *fruit* an acorn. Name from the Celtic *quer*, beautiful, and *cuer*, a tree.

9. Córylus (Hazel-nut).—*Barren flowers* in a cylindrical catkin; *stamens* 3; *fertile flowers* 1—2 together in a scaly involucre; *stigmas* 2; *fruit* a nut in a jagged involucre. Name from the Greek *corus*, a casque, or cap, from the form of the fruit.

10. Cárpinus (Hornbeam).—*Barren flowers* in a cylindrical catkin; *stamens* 5—12; *fertile flowers* in a loose catkin; *stigmas* 2; *nuts* in pairs. Name from the Celtic *car*, wood, and *pin*, a head.

1. Myrica (Gale).

1. *M. Gálé* (Sweet Gale, or Dutch Myrtle).—*Leaves* lanceolate, broader upwards, serrated; *stem* shrubby; *catkins* sessile, erect; *root* perennial. This is sure to be a favourite plant in whatever spot it may grow. Both when fresh and dry, whether in leaf only or with its catkins, it is most deliciously fragrant; and it has many rustic names, and much rustic repute. It is

called Sweet Willow, Dutch Myrtle, Candleberry Myrtle, and in Hampshire is known as the Withy-wind, or Golden Withy. The powerful odour of the plant is well calculated to keep away insects; and country people place it among their clothes, both for this purpose, and that it may impart to them its pleasant scent. They hang boughs of the shrub about the beds, and in some parts of Scotland fill the beds with the leaves. It is very astringent, and is used for dyeing wool, while in Wales it is sometimes mingled with bark in tanning. The catkins, when boiled, yield a quantity of wax, though not nearly so much as is afforded by the American Candleberry Myrtle, or Wax-bearing Myrtle (*Myrica cerífera*), from the wax of which excellent candles, soap, and sealing-wax are manufactured. Gerarde says of our native species, "The Gaule groweth plentifully in the Isle of Ely, and in the fenny countries thereabouts, whereof there is such store in that country, that they make fagots of it, and sheaves which they call Gaule sheaves, to burne and heate their ovens." The dried berries are put into broth, and used in some parts of France as spices; and the plant is there called *Galé*, and *Pimento Royal*.

But of all the economic purposes to which our Gale has been applied, none are so important as its use in making ale. From time immemorial it has been used, especially by the nations at the North of Europe, very extensively for this purpose. In very early times, a law was made in Sweden, which, in 1440, was confirmed by King Christopher, ordaining, that any person collecting the Bog Myrtle on another man's estate, or from any

common before a certain period, should be subjected to a fine. The berries, as well as the bitter leaves, are put into beer, and render it very intoxicating.

The Sweet Gale grows in abundance on the mossy bogs of this kingdom, and is especially plentiful in Scotland and Ireland. It is found from Sutherland and the Grampian Mountains to Cornwall, and also from Lapland and other northern countries of Europe, as far south as the north of Italy. It rises with many stems and branches to the height of two or three feet, and the branches are covered with a greenish brown bark, marked with minute white dots. The leaves are rigid, and somewhat paler beneath, but the foliage has an almost uniform tint of pale yellowish green, and is also sprinkled with the dots, which are glands containing the resin, and they produce, when bruised, the aromatic odour of the plant. The reddish-brown catkins appear at the end of the summer, and, remaining through the winter, may be seen in the spring before the leaves are unfolded. The berries are very small, and covered, like the leaves, with minute resinous glands. Though the pistilliferous and stamen-bearing flowers are generally produced on different plants, yet they sometimes occur on the same shrub. The Germans call this Bog Myrtle *Gemeine Wachs Strauch.*

2. Bétula (Birch).

1. *B. álba* (Common Birch).—*Leaves* sometimes egg-shaped and rounded at the base, sometimes wedge-shaped, at others triangular-acute, doubly serrated;

fruit broad, inversely egg-shaped, with a broad margin; *root* perennial. How musical are the summer woods, not alone with living voices; for even at noon-day, when the birds are silent, there is music still. The waving branches and rustling leaves and bowing grasses beneath them have their music, which is often accompanied by some under-tone of rippling waters. How often have we stood beneath the trees, listening to the gentle voices of the rain-drops on the leaves, or to those soft sounds which seemed mysterious in their origin, till looking up to the very topmost boughs, we saw that there was a quivering there, though the lower branches were not stirred by a breath of wind. We have sometimes fancied that a finely-tuned musical ear could detect the different sounds made by the wind among different trees, and that the whisperings of the delicate Birch-leaves varied somewhat from those heard among the Oak-boughs. Now the sounds seem so soft that the tones of the softest lute could not equal their sweetness; and now they rise and swell till they rush forth like those of some loud-pealing organ. But no sweet instrument framed by the fingers of man can yield such deep, such tuneful utterances as God whispers into the breeze, or pours on the wind of the storm.

There is surely a peculiarly soft and soothing tone of music in the Birch-leaves, when—

> "Rippling through the branches goes the sunshine,
> Among the leaves that palpitate for ever."

And so thought the American poet Lowell, when he wrote—

"Whether my heart with hope or sorrow tremble,
Thou sympathisest still: wild and unquiet
I fling me down; the ripple like a river
Flows valley-ward where calmness is, and by it
My heart is floated down into the land of quiet."

But we might tell of many poets who have praised, both for its grave and its gentle utterances, the "fragrant Birk," "the Lady of the woods." The tree seems formed rather for elegance than strength, yet it is remarkable for its power of enduring bleak northerly or mountain winds, among which many a tree of sturdier frame would perish. Like the beings to whom Coleridge likens it, it is strong by its very weakness, bending before the storm which would rend the stronger bough. It is a native of the coldest regions, and the dwarf species is the last tree which the traveller finds in his course to the North Pole, becoming smaller as he advances to the Arctic Circle, and being in Lapland so stunted, that a whole tree, leaf, stem, and branches, may be spread out between the leaves of a book. It grows in the cold countries of Europe and Asia, and is the commonest tree in Russia; whole forests of Birch covering extensive districts, and without the intermingling of any other tree. In warmer countries it is found wild chiefly on mountainous or bleak spots, and in England it is therefore not so frequently wild as in some other lands, though familiar to us, because so often ornamenting the park or shrubbery. But before the forests of our country fell beneath the progress of civilization, the Birch was probably more plentiful; and Berkshire, and some other places, as well as several family names, are believed to

owe their orign to the Birk or Birchen tree. On the Highland mountains it is found at an elevation of 3,500 feet.

There is a drooping variety of the common species, known as the Weeping Birch, in which all the branches hang downwards. It is frequent in the Scottish Highlands—

> "Where weeps the Birch with silver bark
> And long dishevelled hair."

It adorns, too, the rocky streams in North Wales, laving the tips of its boughs in the stream. It is usually a larger tree than the common form, which latter is not generally among the tallest of our woodland trees. The drooping variety has most slender branches, sometimes thirty feet long, and scarcely thicker than a packthread, so that they remind us of the old English proverb, "Birchen twigs break no bones."

In very favourable situations the Common Birch grows sixty or seventy feet high, but a Birch-tree of even fifty feet in height is rare in England. Far away on the landscape we may distinguish the Birch from all other trees by its slender silvery trunk, which is usually straight, and its white cuticle is in younger trees smooth and shining. In its more advanced stages, however, this outer skin is cleft; and many a crevice, extending even into its inner bark, is made by the touch of time, while it is often tinted here and there with pale yellow hues. The young twigs are of a uniform purple-brown. Many poets, like Wordsworth, have alluded to its delicately tinted scaly stem:—

"But now to form a shade,
For these green Alders have together wound
Their foliage; Aspens flung their arms around,
And Birch-trees risen in silver colonnade."

Beneath the outer bark lies the beautiful smooth Birch bark, of a pale cedar colour, which in Canada is made into so many ornamental boxes, screens, and other articles, and embroidered with dyed porcupine quills. Country children, even in England, sometimes make very pretty little baskets and vases of this material, and its surface is so smooth that it receives writing made with a common pen and ink almost as well as does the bark of the celebrated Canadian Birch-tree, of which Lowell says—

"Thou art the go-between of rustic lovers;
Thy white bark has their secrets in its keeping."

The inexpensiveness of writing-paper renders this bark of small importance in this country. The author of these pages has, however, sometimes written little letters on Birch bark, but has not been able to ascertain that this material is ever so used, even in the most remote districts, by country people. Charlotte Smith, referring to some of our woodland trees, says:—

"The slender Birch its paper rind
Seems offering to divided love;
And shuddering ev'n without a wind,
Aspens their paler foliage move,
As if some spirit of the air
Breathed a low sigh in passing there."

This bark is one of the materials on which the ancients wrote, when as yet the printing-press had not stamped

for ever the record of thought. According to Pliny, the celebrated books which Numa Pompilius composed seven hundred years before Christ, and which were buried with him, were written on the bark of the Birch-tree. The inhabitants of northern countries make shoes of this bark, and weave strips into baskets for household purposes; and it is the resinous matter contained in this portion of the tree, chiefly, which renders the Birch so fragrant, though the resin exuding from the buds, young twigs, and leaves, probably contributes also to the odour. If a strip of bark be lighted, it burns with a clear blue flame, and gives a light equal to that of two ordinary candles, diffusing at the same time a most delicious perfume. The inhabitants of the Highlands, who call this substance *meillag*, were formerly accustomed to use it instead of candles; and on the Alps torches are frequently made of the resinous Birch-boughs.

The Birch is indeed a blessing to those countries in which trees are scarce; and the forests at the north of Europe, extending, as they do, through the length and breadth of the land, form a providential supply of necessaries and comforts to the dwellers in those cold regions. Large tracts of Birches, Pines, and Firs, have all their value, and in dreary Iceland the Birch grows to the utmost limits of vegetation, supplying to the people a most valuable store of benefits. Their winter hearth is cheered by its fuel, the bark serves them for boats, the twigs are used for ropes and cordage, and the bark, cut into square pieces, is in many northern countries used instead of tiles for the houses. The bark is unin-

jured by exposure to weather, and so durable that it even outlives the wood within. Maupertius, when travelling through Lapland, passed through extensive forests of this tree, and he says that the fallen Birches and Firs lying among the moss often rendered the road almost impassable. On examining these trunks, he found that time had reduced the wood to dust without occasioning the smallest change in the bark. "We were," he says, "surprised to find that, with the least stroke, we could crush and break them, although of some size." Such a sight would readily suggest to the people of the North the use of this bark on the roofs of houses; and in Sweden the bark is covered with a layer of earth, on which grass and other plants are grown. It is also used in tanning, and the pleasant fragrance of the Russian leather bindings to books is derived from the oil of the Birch. Large thick pieces of bark easily separate from the wood, and form hollow cylinders, which, after being flattened, are worn by the Laplanders on their shoulders to protect them from rain.

The Russians believe that the Birch is never struck by lightning. They are very fond of the tree; and though immense tracts of their land are covered with its wild growth, yet they surround their dwellings with its graceful boughs; and in the neighbourhood of Moscow, where it grows on the estates of the nobles, it is the prevailing tree of the landscape. Leyden, in his pretty version of the Finland Mother's song, records another use of a portion of this tree in the North:—

"Sweet bird of the meadow, oh! soft be thy rest,
Thy mother will wake thee at morn from thy nest;

She has made a soft nest, little Red-breast, for thee,
Of the leaves of the Birch, and the bark of the tree.
Then soothe thee, sweet bird of my bosom, once more;
'Tis Sleep, little infant, that stands at thy door."

The catkins and young buds form a store of food to the birds, so abundant in northern latitudes; and some ornithologists consider this tree to be the great source of attraction to many birds, which feed on the catkins in spring, and the seeds in winter. The grouse prefers the seeds of the Dwarf Birch; but the ptarmigan, as well as the smaller birds, seem to like best those of the common species. The pretty little siskin is very fond of the catkins.

In Siberia and other northern countries, large knobs which grow on the Birch-trees are frequently used for making bowls, being cut very thin, and then highly varnished. They are represented by Kalm as very pretty articles of domestic use, being of a pale yellow colour, marbled in a picturesque manner, and so thin as to be almost transparent. When put into water, they are, he says, so pliable that they may be quite flattened; but when removed and left untouched, they regain their original form. These vessels sell for a high price in Russia.

The Highlanders, as Mr. Loudon observes, make everything of the Birch-tree—houses, beds, chairs, tables, dishes, spoons, carts, ploughs, fences, barrows, and even ropes. They use its branches in distilling their whiskey, the spray for smoking hams and herrings, and for thatching houses; and in spots on which heather is scarce, they gather the slight boughs of the Birch and sleep on them

or fill their beds with the leaves. The knobs, which they call "Witches' Knobs," they also cut into bowls; and an old Scottish proverb, which says of a very poor man that he is "Bare as a Birk at Yule e'en," seems to allude to the old custom of stripping the bark of the tree to make the Yule or Christmas log, while the young shoots are used for brooms, and a very pleasant wine is made from the sap.

The leaves of the Birch were much praised by our old herbalists for medicinal properties; these, however, are very slight. We wonder not that in the olden days, when the houses and churches were decked with boughs, our fathers so commonly used those of the Birch. In looking over the works of our antiquaries, as those of Stowe and Brande, we find continual mention of the Birch in garlands; and Gerarde tells how it was used for "banqueting rooms for places of pleasure."

The French call our tree *Le Bouleau;* and the Germans, *Die Birke.* The Italians term it *Betula;* the Spaniards, *Abedul;* and the Russians, *Beresa.* It is the *Birk* of the Danes; and the *Biork* of the Swedes; while the Anglo-Saxons called it *Bire*, or *Birce.* It is often termed the Birchen-tree, especially in poetic descriptions; and Wachter thinks that the word is from the verb *brechen, splendere,* to be bright; and that it refers to the brilliant whiteness of the outer rind. Pliny comments on this rind, and in the words of his translator says, "It showeth wonderful white."

2. *B. nána* (Dwarf Birch).—*Leaves* roundish, bluntly crenate, smooth, on short stalks: *fruit* roundish, with

a narrow margin; *root* perennial. This little shrub, which is common in several parts of the Highlands of Scotland, is rare in the Lowlands. It is in Britain, as well as in some parts of Northern Europe, a low shrub, rarely more than two feet high; but in Russia and Siberia, where it is a common plant, it reaches, when growing in wet places, the height of six feet, and when cultivated assumes an erect form, and becomes somewhat taller. Small as is the shrub in Lapland, it is of great importance, serving for fuel, couches, and also for dyeing yellow. Its boughs are burnt to chase away by their smoke the gnats which so trouble the reindeer; and a fungus which grows upon it is used by the Lapland doctors in some painful disorders. The ptarmigan, or white partridge, one of the most important sources of Lapland commerce, is supported by its catkins. The fertile catkins grow at the extremity of its branches.

3. Álnus (Alder).

1. *A. glutinósa* (Common Alder).—*Leaves* roundish, blunt, wavy, serrated, glutinous, with a wedge-shaped base; *axils of the veins* downy beneath; *barren catkins* long and drooping; fertile ones short, remaining long on the tree; *root* perennial. Most persons love to wander where the stream is winding its way through grass and flowers. The child goes there for the minnows, the naturalist seeks there some of the sprightliest birds and brightest insects, and the botanist lingers there for the richest profusion of flowers. The lover of nature

and the poet delight to listen to the gentle songs of winds and waters, and waving willows and alders, and to mark the truth of the poet's description of the stream :—

"It flows through flowering meads,
Gladdening the herds which on its margin browse;
Its quiet bounty feeds
The Alders that o'ershade it with their boughs.

"Gently it murmurs by
The village churchyard its low plaintive tone;
A dirge-like melody,
For worth and beauty modest as its own.

"More gaily now it sweeps
By the small school-house, in the sunshine bright;
And o'er the pebbles leaps,
Like happy hearts by holiday made light."

As the mind recals the river-side and its scenery, we remember the dark-green Alders which so often contrast with the brighter or paler foliage of the various kinds of Willow. Its masses of somewhat heavy leaves remind one, in form, of the foliage of the Hazel, but though darker in tint, yet their glossy surface reflects the light of the sun far differently; and the young shoots which encircle the base of the blackish rugged trunk are of the most tender green. The Alder perpetuates the moisture of the soil, and does not, like the Ash, serve to drain it, yet grass grows, and is rich and green beneath its shadow. Many an old English name of town or village is derived from this tree. In the North it is commonly called Eller, and the Anglo-Saxons called it Ellyrtre, a name which we trace in the *Elletraoe* of the Danes, the *Elzeboome* of the Dutch, and the *Erlenbaume* of the Germans. The

town of Ellerburne, in Yorkshire, doubtless derived its name from its growth of Alders, as did Ellerbeck, where Alders fringed the beck, or stream. The Latin *Alnus*, French *Aulne*, and Spanish *Alno*, are thought to be abridged from *Alor amne*, "I am nourished by the stream;" and the Alder and Eller have probably the same origin. The Alderkars of our ancestors were spots where Alders grew; and Mr. Forby says that, in Norfolk, the word Car signifies a wood or grove, in a moist soil, generally of Alders. In the Anglo-Latin Dictionary Ker is given for Alder, and "where treys growyn be a water or a fenne." Mr. Albert Way remarks, "Camden, in his 'Remains,' explains Car as signifying 'a low watere-place where Alders do grow.'" He adds, that John Crane of Norton Subeors, Norwich, bequeathed to his wife in 1484, "All the londes, merys, marysses, alderkars, &c., in Norton." On the Hereford side of the county of Salop the Alder is called the Orl.

The Alder is a common tree by water-sides throughout Europe, and is more truly aquatic than any other extra-tropical tree, flourishing in soils too moist for even the Willow and the Poplar. It occurs occasionally as a shrub on the mountains, but on its native moist grassy slopes it becomes a goodly tree, sometimes fifty or sixty feet high. The largest Alder in England is one near a rivulet at Haverland, in Norfolk.

We can hardly describe the Alder as a handsome tree. Its rifted trunk is dark, and its foliage too heavy to move much in the wind, so that it offers less variations of light and shadow, as well as of tint, than most trees. Gilpin, however, considers it picturesque, and

says, "He that would see the Alder in perfection, must follow the banks of the Mole, in Surrey, through the sweet vales of Dorking and Mitcham, into the groves of Esher. The Mole, indeed, is far from being a beautiful river; it is a silent and sluggish stream; but what variety it has it owes chiefly to the Alders which everywhere fringe its meadows, and in many places form very pleasing scenes." The foliage has this advantage, that long after the Willow boughs are bare, and seem to serve as a harp over which the winds of winter may play, the Alder-bough is scarcely losing a leaf from the green mass. The foliage is glutinous, and if we put a leaf in the mouth, we might fancy we were biting a thin layer of India-rubber. The surface is so clammy that small insects are caught by it. "The said leaves," says an old herbalist, "gathered while the morning dew is upon them, and brought into a chamber troubled with fleas, will gather them thereunto, which being suddenly cast out, will rid the chamber of those troublesome bed-fellows." These leaves when in bud are completely wrapped up in two oblong whitish stipules, which, as the leaves burst open, are scattered by the wind around the tree.

Our fathers found many medicinal virtues in the Alder, and the bark is undoubtedly astringent and tonic. It is thought to be as efficacious as the Peruvian bark, if taken in about twice the quantity; and a decoction used as a gargle in sore throat is very useful. But the value of the old application of the leaves is somewhat doubtful. The decoction of Alder-leaf was considered "excellent against burnings and inflammations." The leaves were

applied to wounds, and were recommended to be placed beneath the "feet of the weary traveller," who was promised a "great refreshing" by the application. The leaves and young shoots are eaten by cows, goats, horses, and sheep, but are not very attractive to these animals; and Linnæus says, that when they eat them, their tongues are turned black.

It is for its wood that the Alder is prized in modern times. It is used in turnery and cabinet-making, and is wrought into shoes, clogs, and other articles. Very pretty tables are made of the old knotted trunks of the trees, which are varied like the most beautiful Maple-wood, and are of a reddish-brown hue. The new wood is dyed brown for many ornamental purposes; and in peat-bogs, where the fallen Alders have lain for ages, it has become as black as ebony, and many articles believed to be of ebony are, in fact, made from this bog-wood.

But the great superiority of the Alder-wood above that of any other tree, is its durability when under water. This quality was well known to the ancients, and Virgil says, that the first boat was made from it:—

"Then rivers first the hollow'd Alder knew."

Vitruvius records its fitness for piles; and in Pliny's time it was used, not alone for piles, which he calls "eternal," but also for water-pipes. It is still much employed in the embankments of Holland, and the city of Ravenna, as well as the far-famed bridge, the Rialto of Venice, is built on Alder piles. It is well fitted for water-pipes, as being easily perforated, but modern inventions have almost superseded its use. It affords


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one of the best charcoals for gunpowder, and no other wood forms carbon so fitted for galvanic experiments, Alder charcoal having been long used in voltaic batteries. The astringent bark and young shoots furnish the tanner with a good material, and the latter, as well as the catkins, yield a good green dye. The short, oval, fertile catkins are used by fishermen instead of corks to buoy their nets above water.

4. Sálix (Willow).

Group I. Monandræ.—*Borr.*

Filament 1 ; *capsules sessile ; catkins lateral, sessile, very compact, with small bracts at the base, appearing before the leaves ; leaves green, not silky or downy beneath ; small trees or twiggy shrubs.*

1. *S. purpúrea* (Purple Willow).—*Capsule* egg-shaped, downy, sessile ; *style* very short ; *stigma* egg-shaped ; *leaves* often opposite, broader upwards, tapering to a point, finely serrate ; *stipules* none ; *branches* in one form bending down and purple, in another (the *S. Lambertiana* of Smith) erect, with the branches purple or yellow, and the leaves oblong, linear-lanceolate ; while in a third form, Woolgar's Willow, the leaves are wedge-shaped lanceolate. This Willow, when growing wild, is but a shrub, with a stem about three or four feet high, having long slender branches, which in the trailing variety are of a rich purple colour, with a somewhat

glaucous tint, and very smooth and glossy. It grows about marshes, and—

> "Where the runnel winds its weedy way,
> And where the Willows on its margin grow."

The catkins appear in March and April on the yet leafless boughs, and the anthers are at first purple, becoming finally black. This Willow is sometimes planted for basket-work, as well as for making slight fences; and as the bark is bitter, these fences are not destroyed by hares and rabbits. It is a pretty plant during winter, its graceful purple boughs being ornamental even without leaves, and the young shoots in spring being clothed with a few delicate green leaves and numerous catkins of a purplish-brown tinge.

The classification of the Willows is attended with considerable difficulty, botanists varying much in opinion as to the number of species. Until within the last few years, numerous plants now found to be varieties were described as distinct species. Mr. Borrer has given great attention to the Willows, and the authors of the "British Flora" have followed his arrangement with but few deviations. Our list is given from theirs, but for the very minute scientific characters, as well as for the exact descriptions of many varieties once considered species, the reader is referred to that valuable work.

2. *S. Hélix* (Rose Willow).—*Capsule* egg-shaped; *style* nearly as long as the cleft stigmas; *leaves* often opposite, lanceolate, broadest upwards, and tapering to a point, finely serrated, without stipules. This species differs from the last so little, that some botanists regard

it but as a variety of the Purple Willow. It is characterized chiefly by its much longer style and cleft stigmas. It is a tree of humble growth, with erect branches, covered with yellow or purplish-grey glossy bark. Its catkins are longer than those of the last species, and the fertile ones are more than twice as thick. It is taller than that shrub, and has altogether a lighter hue.

The plant owes its name of Rose Willow to certain rose-like expansions at the end of the branches, which, though found occasionally on other willows, are more frequent on this. These tufts are caused by the puncture of a cynips, which deposits its eggs in the tops of the twigs, in consequence of which they shoot out into leaves differing from the ordinary form of the foliage, and not unlike a rose in their growth. They are conspicuous on the boughs even in winter, remaining long after the wind has swept away all other foliage, and some of the tufts being two or three inches across. The leaves and twigs of this species have but little bitterness, and Sir J. E. Smith says that the roots give more strength and solidity to the banks of rivers and ditches than do those of the Purple Willow; while Dr. George Johnston was of opinion that it endured storms better than any other species. Gerarde says of the Rose Willow, that it "makes a gallant showe, and yields a most coole aire in the heate of summer, being set up in a house for the decking of the same." Its twigs are used by the basket-maker for coarse work. Its name of Helix is thought to be derived from the peculiar twist of its leaves, reminding one of the snail.

3. *S. Forbyána* (Fine Basket Osier).—*Leaves* alter-

nate, lanceolate, oblong, serrated, smooth; *style* nearly as long as the divided stigmas; *stipules* linear-lanceolate. This plant, which is called Forby's Willow, after the Rev. Joseph Forby, grows wild in Cambridgeshire, and is not unfrequent in meadows and osier-grounds about Fincham, in Norfolk. It is nearly allied to *S. Hélix*, but differs from it in its foliage. The stem is erect and bushy, with upright slender twigs, very smooth and glossy, and of yellowish-green colour. The fertile catkins much resemble those of the last species.

This is one of the willows greatly used by the basket-makers, its tough flexible twigs serving well for the finer kinds of wicker-work. As Grahame says—

> "To name the uses of the Willow tribes
> Were endless task. The basket's various forms
> For various purposes of household thrift,
> The wicker-chair, of size and shape antique,
> The rocking-couch of sleeping infancy,—
> These, with unnumber'd other forms and kinds,
> Give bread to hands unfit for other work."

Several species of Willow are grown for these uses in osier-holts, though of late years large numbers of osiers have been imported from Holland, in which country the "Willows by the water-courses" are very numerous. The Common Osier, *S. viminális*, and the Three-stamened Osier, *S. triándra*, are among those most commonly planted; and large patches of low land, too moist for the growth of other trees, are in Holland and Spain covered with Osiers. In this kingdom, in the flat parts of Lancashire, as well as on the great level of the Fens, osier-grounds are not unfrequent, and are some-

times sixty or seventy acres in extent, spots being chosen for osier-holts whose surface is not overflowed with water during summer for more than a few days, though an inundation lasting through three of the winter months is unimportant. Several different kinds of Osier may be grown on the same ground; and the land is cultivated at small expense, but it is necessary that it should be kept free from weeds. The Osiers are suffered to grow for two years, after which their flexible boughs are cut annually, and the plant either sold "green," as it is technically called, by the acre, or the shoots are cut and tied up in bundles; the larger growers generally disposing of them in the latter mode. They are prepared for the basket-maker's use by setting them up immediately after cutting, with their thicker ends a few inches deep in water, and after a time, stripping off the bark; and in Essex, as well as some other counties, groups of country people may be seen sitting on the village green engaged in preparing the Osier-boughs.

4. *S. rúbra* (Green-leaved Osier).—*Filaments* forked at the top, and bearing 2 anthers; *capsule* oblong-egg-shaped; *style* elongated; *stigmas* undivided; *leaves* alternate, linear-lanceolate (broader in the fertile plant), tapering to a point, and serrated; *stipules* minute. This plant of the wet meadow, or osier-holt, is rare in England, though not unfrequent in the hedges and osier-grounds of Scotland. It occurs about Maidenhead, and near Salisbury, in several parts of Cambridgeshire. and a few other localities. The peculiarity of its forked filaments combining below, distinguishes this species

from nearly all our native Willows except *S. Croweana*, and it is a rare character in any of the foreign species of the genus. The Green-leaved Osier is a small tree, flowering in April and May, with long erect branches, usually of a dull brown, but sometimes of a greyish or purplish tint. Its leaves are long, narrow, and tapering, of full green hue, and its anthers are yellow. It has no claims to the character of redness implied in its specific name, and this was given originally to a species with which it was confounded. When planted, it sometimes grows to the height of thirty feet, and its shoots, which are from five to eight feet long, are useful for basket-work, crates, and other purposes.

Group II. Triandræ.—*Borr.*

Stamens 3; *capsules* stalked; *catkins* loose and leafy; trees or large shrubs with glossy serrated leaves and stipules shorter than the leaf-stalks, most of the plants constituting excellent Osiers.

5. *S. triándra* (Blunt-stipuled Triandrous Willow).—*Leaves* serrated; *stipules* half heart-shaped, blunt; *scales of the catkins* smooth, or slightly hairy; *stigma* nearly sessile. Several forms of this Willow occur, differing chiefly in the shape and tint of the leaves, which are always perfectly smooth, but which in one variety are oblong-lanceolate, in another linear-lanceolate, in some more approaching to egg-shaped. These have formerly been described as different species, and are known as



1. [illegible] WILLOW
Salix triandra

2. SWEET BAY LEAVED WILLOW
Salix pentandra

3. [illegible] WILLOW
Salix [illegible]

4. [illegible] WILLOW
Salix [illegible]

the Long-leaved Triandrous Willow, the French Willow, Short-leaved Triandrous Willow, and the Almond-leaved Willow. This species furnishes in all its forms tough flexible boughs, which afford excellent material for wicker-work, hoops, and crates. The catkins appear from March to June, and the tree sometimes attains a height of thirty feet. It may be found in wet woods, and by water-sides; and many a patient angler has sheltered himself beneath its boughs, or gone, as Clare describes the peasant as doing—

"To seek the brook that down the meadow glides,
Where the grey Willow shadows by its sides;
Where flag and reed in wild disorder spread,
And bending bulrush bows its taper head;
And just above the surface of the floods,
Where water-lilies mount their snowy buds,
On whose broad swimming leaves of glossy green
The shining dragon-fly is often seen;
Where hanging thorns with roots wash'd bare appear,
That shield the moorhen's nest from year to year;
While crowding osiers mingling wild among,
Prove snug asylums to her brood when young,
Who, when surprised by foes approaching near,
Plunge 'neath the weeping boughs and disappear."

It is one of the most valuable Osiers, and is often cultivated for basket-work, and the almond-leaved variety bears its flowers not only in the spring, but again in August.

6. *S. unduláta* (Sharp-stipuled Triandrous Willow).—*Leaves* lanceolate, tapering to a fine point, sharply and finely serrated, often wavy; *stipules* half heart-shaped, acute; *scales of the catkins* very downy; *capsule* smooth or silky; *style* as long as the stigmas. This species,

which is the *S. lanceoláta* of Smith, is also sometimes called the Wavy-leaved Willow. It grows near Lewes in Sussex, but is scarcely a native plant. It is a small bushy tree, rarely more than ten feet high, with brown smooth round branches, and beautiful silky catkins about an inch long, which appear in March and April, the young leaves being almost as silky as the catkins. It is cultivated for the coarser kind of basket-work, such as crates and hampers.

Group III. Pentandræ.—*Borr.*

Stamens usually more than 3 in a flower, mostly 5, very long; *capsules* stalked; *catkins* lax, appearing with the leaves; *leaves* large, serrated, having glands in their serratures, from which a resin exudes.

7. *S. pentándra* (Sweet Bay-leaved Willow).—*Leaves* egg-shaped, pointed, glossy, on footstalks which are glandular at the summit. This is one of the most ornamental of our native Willows, scarcely indeed reminding us of the Willow tribe, its large, plentiful, deep green leaves resembling rather those of our cultivated evergreens. When growing wild it is but a bushy shrub, rarely more than eight feet high; but when cultivated, it becomes a tree reaching to the height of twenty feet. Some such willows may be seen reflected in the waters of pleasure-grounds, though less frequently than from its beauty one might expect. It often forms compact, hardy-looking bushes by the stream sides of the north of

England, and in Ireland; and the Rev. C. A. Johns remarks of it, in his "Forest Trees of Britain," that he has seen bushy hedges of this willow stretching across the extensive bogs which abound in the neighbourhood of the Giant's Causeway. Its leaves are fragrant, and when bruised, as sweet as those of the Bay-tree. Its beautiful catkins are also sweet-scented, and by the middle of summer are very ornamental, with the bursting seed-vessels which are sending forth their thousands of seeds to be borne through the air by their snow-white wings. In the earlier months the silky down of several willows had served as lining for the nests of many a singing bird, and now the small seeds are yielding them a large store of food. This down may be collected for filling cushions and pillows, and is used in making an inferior paper; while when mixed with a third part of cotton, it has been advantageously adopted for candle-wicks and other purposes. The Germans mingle it with other materials in making a kind of wadding for ladies' dresses. The wood of this willow is too brittle to be of much importance, but the tree produces long flexible twigs, fitted for basket-work. The rare Gothic moth (*Phalæna typicöides*) feeds on this plant.

8. *S. cuspidáta* (Cuspidate Willow).—*Leaves* oblong-lanceolate, pointed, smooth, green and shining above, rather pale beneath, but not of sea-green tint, serrated; *stipules* half heart-shaped oblique; *stamens* 3—4; *stigmas* 2-cleft. This willow is scarcely different from the last, the form of the stipules and the longer stalk of the ovary forming the chief distinctive characters. It is a handsome tree, with large, broad, shining leaves, and

brownish smooth branches, somewhat warty. It has long slender catkins in March and April. It occurs near Shrewsbury, but is a doubtful native, having probably been introduced from Sweden or Germany. It was by Willdenow termed *S. Meyeriana.*

Group IV. Fragiles and Albæ.—*Borr.*

Stamens 2 to a flower; *flowers* very loosely disposed in the catkins, which appear with the leaves on short lateral leafy shoots; *leaves* lanceolate, serrated, smooth, and stipuled.

9. *S. frágilis* (Crack Willow).—*Leaves* smooth or downy beneath, when young; *stipules* half heart-shaped; *capsules* more or less stalked; *style* conspicuous. Some remarkable varieties occur in this species. The leaves are either egg-shaped lanceolate; or they are lanceolate, tapering at both ends, as in the Bedford Willow, in which they are also downy during their early stage; or they are lanceolate and quite smooth, as in the White Welsh or Varnished Willow, a variety readily distinguished by its polished bark. The Crack Willow is a not unfrequent tree, and in spring time it is truly ornamental to marshy places or moist woods, as its beautiful grey catkins hang in tufts from among the leaves like silver pendants. It is a large tree, sometimes even eighty feet high, with a bushy head, and branches arranged obliquely, so that they sometimes cross each other; a form very different from that of most of the Willows, which have their branches usually issuing in almost straight lines from the trunk. The brittle nature

of the branches originated the name of Crack Willow; and this brittleness is so great at the base that they may, during spring, be severed from the trunk by a slight blow. It is commonly in country places called Withy, though this is a very old name for any kind of willow. The Anglo-Saxon names of the Willow were, *Welie*, *Welige*, and *Wilhig;* and Kilian considers that *Willighe* was given because the tree grows promptly and willingly, that is, freely; as the Latin *Salix e saliendo* is from the shoots it makes. The roots of the Crack Willow are used in Sweden to colour the Paschal eggs, usually presented among friends and neighbours at Easter. The variety termed the Russell or Bedford Willow has very smooth glossy leaves tapering at both ends, and long cylindrical yellow catkins, standing on short leafy branchlets. Like the Crack Willow, it attains a great height; but a marked difference in this form exists in the insertion of the long slender branches, which are straight and not angular in their arrangement; and Mr. Forbes remarks that the two forms, when stripped of their leaves, may readily be distinguished from each other by this circumstance: nor are the branches of the Bedford Willow always brittle. Nearly allied as the two forms are in their general characters, yet they differ in their economical value; and the Bedford Willow, besides being the handsomer variety, furnishes better wood. Its wood, indeed, is more valuable than that of any other of the Willow tribe. The bark contains more tannin than even that of the oak-tree, and no other willow furnishes so large a proportion of the principle called *salicine*, which is considered scarcely inferior in its medicinal properties to

quinine, although the bark of most willows is astringent and tonic. The tree thrives best near water, yet water is not necessary to its growth, and it is planted with success upon some upland soils. It is named after the Duke of Bedford, who, in his "Salictum Woburnense," first attracted attention to it. Dr. Samuel Johnson has made one willow of this kind famous, by the delight which he took in reposing beneath the full shadow given by its wide boughs and ample foliage. It stood by the public footpath in the fields near Lichfield, and was said to have been planted by the father of the great Lexicographer; while, on the other hand, it has been affirmed that he had set it with his own hand. However that may be, it was a favourite tree with the Doctor; for he used to remark that it had been the delight of his early and waning life; and had he lived to witness its destruction, he would have shared in some of the feelings expressed by Pollok for two older trees:—

"Tall trees they were
And old, and had been old a century
Before my day. None living could say aught
About their youth; but they were goodly trees:
And oft I wonder'd, as I sate and thought
Beneath their summer shade, or in the night
Of winter heard the spirits of the wind
Growling among their boughs—how they had grown
To such a height in such tempestuous place.
And when a hapless branch, torn by the blast,
Fell down, I mourn'd as if a friend had fallen."

In the spring of 1810, Dr. Withering found Dr. Johnson's tree having, at six feet from the ground, a girth of twenty-one feet, and extending twenty feet in height


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before dividing into enormous branches. It then stood in unimpaired beauty, a noble tree ; but, in the autumn of that very year, a tempest rent away many of the branches ; and five years afterwards nearly half the tree fell, leaving only the large trunk and a few side boughs. A storm in April, 1829, finally levelled this handsome and interesting willow to the ground ; but a young shoot which had been taken from the tree in the previous season was planted on the old site, and became the "Johnson's Willow" of later years.

The variety of *S. frágilis*, termed the Varnished Willow, is an upright tree with black buds in spring, the branches of the last year being clay-coloured, smooth, and glossy like porcelain, while the shoots of the present year are of crimson colour, the hue often extending to the midrib of the leaves. It is much cultivated for basket-work.

10. *S. álba* (Common White Willow).—*Leaves* elliptical-lanceolate with glandular serratures, pointed; when young silky beneath, often so above; *ovaries* nearly sessile, smooth; *stigmas* nearly sessile, short; *scales* short, downy at the margin. In one variety of this willow the young leaves are silky on both sides; and in another, termed the Blue Willow, the under side of the leaf is silky at first, but finally becomes quite smooth, and of sea-green hue. This is the commonest of all our willows, and one well known to country dwellers or country ramblers, growing in moist woods, and turning up, as the wind blows, its "silver lining to the light." It looks quite hoary and venerable when in age ; and though a handsome tree, yet it needs the admixture on the landscape of some warmer-tinted foliage, or the

scene is cold and grey. When growing in numbers it might remind us of what Robert Hall said of the willows about Cambridge, that they "looked as if Nature were hanging out signals of distress;" and as the tree is often pollarded, the old pollard here and there has a very cheerless and unpicturesque appearance. In olden times many kinds of trees were pollarded, as their wood was needed for fuel instead of coal; and some of the largest oaks in the kingdom appear to have been so cut in order that they might serve as living stores of fuel to the inhabitants of the neighbouring mansion. In earlier days such trees were called Pollingers and Dotterels. For many years past they have been more scarce on the landscape, and the willow-trees alone are now made into pollards, that their boughs may furnish our baskets. The White Willow has been largely planted for this use, both in this and other countries; and Mr. Loudon says that some hundreds of miles of the road from Moscow to the Austrian frontiers, where it crosses the interminable steppes, are marked by pollards which are planted at regular distances on both sides of the way. Many a wild spot in our own land might remind us of Pringle's description:—

"And foxgloves looked out from the osiers dank,
And the wild thyme and violet breathed from the bank,
And green fairy nooks 'mid the landscape were seen,
Half hid by the grey rocks that over them lean,
Where the light Birch above its loose tresses was waving,
And the Willow below in the blue stream was laving
Its silvery garlands of soft downy buds."

This species is sometimes called the Huntingdon Willow. It grows with great rapidity, and on some of

our river sides may be found trees measuring sixty, seventy, or even eighty feet in height. It is one of the most valuable of all the Willow tribe, and when deprived of its top and made into a pollard, it furnishes wood for poles, fences, crates, and fuel, and is useful for naval architecture, roofs of houses, weather-boards, and other purposes.

Its twigs form a very important article to the basket-maker, and of the wood, cut into thin strips, are made those willow hats and bonnets known at different periods as fashionable summer attire. The bark of the tree is thick, and very liable to crack. It is as valuable to the tanner as the oak bark; and as a medicinal tonic, it is inferior to none of the species, save the *S. Russelliana*. Our fathers knew its worth in the cure of agues; and it was, in very early days, prescribed for several disorders. In the "Breviarie of Health," published in 1598, we find the "oyle" of the willow used as a remedy; and it was probably procured by preparing the willow bark with oil. Thus the author says: "Also for the crampe take of the oyle of lillies and Castory, if it doe come of a cold cause: if it doe come of a hot cause, anoynte the sinews with the oyle of water lillies and willows, and roses. If it doe come of any other cause, take of the oyle of Euforbium and Castory, and of Piretory, and confect a compound all together, and anoynt the place."

The bark of the White Willow will, when old, burn freely, and the wood is useful for fuel, and is said to be best suited for the purpose while yet green. The charcoal formed from this and several other willows

affords an excellent material both for crayons and gunpowder. Before the introduction of coke into our iron works, wood was used in such large quantities for charcoal, that Evelyn, in his "Sylva," expressed his apprehension lest its use should lead to the entire destruction of our forests. The forest of Dean has, indeed, been almost entirely destroyed by this use of wood in charcoal burning. Professor Burnett states that, "even in 1788, twenty-six out of the eighty-six iron furnaces were heated by wood charcoal; but, in 1826, the three hundred and five, to which they had at that time increased, were all fed by pit-coal coke." In France, a rich crimson colour is obtained from the bark of the White Willow.

11. *S. vitellína* (Yellow Willow, or Golden Osier).—*Leaves* lanceolate, with glandular serratures, tapering to a point, silky beneath, often so above; *germens* sessile, smooth; *style* short; *stigmas* two parted; *scales* lanceolate pointed. This willow is common in hedges in many parts of the kingdom. In early spring, in leafless woods, where

"The willow trails its delicate amber,"

the flexible boughs contrast well with the red Cornel twigs, and the green boughs of Ivy or Holly, and are so conspicuous that few would pass them unobserved. They retain this golden yellow tint throughout the year, giving to this tree a marked peculiarity. The leaves, too, are sometimes of golden hue, and the plant is, from its colour, known in some places as the York of Egg-coloured Willow. It is often cultivated for the basket-maker in osier grounds, and also as an ornamental tree in gardens. It is in the hedges usually but a shrub,

but grows under culture to a tree, sometimes thirty feet high. Its catkins are long and tapering, and appear in May.

Group V. Griseæ.—*Borr.*

Stamens 2, distinct; *capsules* silky on long stalks; *catkins* short, lax, on lateral stalks, with sometimes a few bracts at their base, appearing before the leaves; *leaves* lanceolate, serrated, with small stipules.

12. *S. petiolâris* (Dark long-leaved Willow).—*Leaves* when young with long silky hairs; *capsules* egg-shaped-lanceolate; *stigmas* nearly sessile; *scales* shaggy with black hairs. This is a bushy tree found in the marshes of Angus-shire, and in a marsh near Glasgow, and it has been introduced by Mr. Dickson into plantations. It is a common tree of North America, but not truly indigenous to Britain. It is very unlike most Willows, having brown, smooth, purplish branches, and dark dull, greyish-green leaves. Its catkins, which appear in April, are short and blunt. The plant seems to abound in tannin, and the leaves have, when gathered, a pleasant almond-like scent.

Group VI. Rosmarinifoliæ, Fuscæ and Ambiguæ.—*Borr.*

Stamens 2; *capsules* silky, stalked; *catkins* sessile, short and rather compact, with bracts at the base; *leaves* small or narrow, or with satiny down. Small or trailing shrubs.

13. *S. rosmarinifólia* (Rosemary-leaved Willow).—*Leaves* linear-lanceolate, pointed, especially silky while young, entire, or with a few glandular teeth; *catkins* oblong, more lax when older; *stigmas* entire or cleft; *scales* short, covered with shaggy down. This slender shrub, which is two or three feet high, bears its short silky drooping catkins in April. The branches are upright and round, and the young shoots very silky. The leaves are erect and narrower than those of almost any other willow, and are sometimes two inches long. The down which, while they are young, covers the upper surface, finally disappears, and the veining is clearly seen, but the foliage always retains the silkiness on its glaucous under side. It is a doubtful native, occurring on some sandy grassy places in the north of this kingdom.

14. *S. angustifólia* (Little Tree Willow).—*Leaves* linear-lanceolate, nearly smooth, with minute glandular serratures, the young ones silky, glaucous beneath; *catkins* egg-shaped, erect; *style* about as long as the broad erect entire stigmas; *scales* very downy at first. This is a little erect slender shrub, about a foot high, with the leaves narrowing at both ends, and when young quite grey with silky down. It is found in the Highlands of Scotland, on the Clova mountains, and also near Dumfries. It has been thought to be the *S. arbuscula* of Linnæus; but the authors of the "British Flora" remark that it is not the *Arbuscula* of Continental botanists. It is nearly allied to the last species, differing chiefly in the more shaggy scales, and entire stigmas. It has short lax catkins in April.

15. *S. Doniána* (Don's Willow, or Rusty-branched


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Willow).—*Branches* at first procumbent, afterwards erect; *leaves* inversely egg-shaped-lanceolate, serrated: *stipules* linear; *catkins* erect, cylindrical, dense; *stigmas* short. This shrub, which is about six feet high, much resembles *S. purpúrea*, differing from it chiefly in its stalked germens, and in the silkiness of the under surface of its leaves. Its stem sends out leafy branches, which, when very young, are slightly downy, becoming afterwards of rusty brown colour. The leaves are an inch and a half long, flat and nearly erect, much veined, green on the upper surface, but of dull livid colour, and slightly downy or silky beneath, with a prominent reddish midrib. The catkins are on short lateral stalks, and appear in May.

16. *S. fúsca* (Dwarf Silky Willow, or Brown Willow).—*Leaves* elliptical or elliptic-lanceolate, broadest about the middle, acute, entire, or with minute glandular serratures; somewhat downy, glaucous, mostly very silky beneath; *ovaries* upon a long stalk; *stigmas* 2-cleft. A large number of plants formerly considered distinct have, by the authors of the "British Flora," and Mr. Borrer, been regarded as varieties of this species. They differ in the erect or trailing nature of the stem and branches, and in the form and downiness of the leaves, and were described as *S. répens*, *S. prostráta*, *S. foétida*, *S. adscéndens*, *S. parvifólia*, *S. incubácea*, and *S. argéntea*. The Dwarf Silky Willow is usually a beautiful little shrub, with rather long straight branches, but varying very much according to situation. It is in one of its forms, the *S. argéntea*, abundant on some commons, trailing its leafy branches, which are grey with silkiness;

or in some cases holding itself up by means of neighbouring furze or other bushes; its leaf is generally twisted at the point, and beautifully silvery and shining. The varieties ar all plants of heaths and moors, or sandy situations.

17. *S. ambígua* (Ambiguous Willow).—*Leaves* oval, inversely egg-shaped or lanceolate, downy, slightly toothed, with the point turning backward; somewhat rugged above, glaucous, with prominent veins beneath; *catkins* erect; *germens* stalked; densely silky; *style* very short; *stigmas* cloven. In one form the leaves are oval, or inversely egg-shaped, and moderately hairy; in a second, they are inversely egg-shaped, and very silky on both sides; and in another, the *S. spathulàta* of Willdenow, they are inversely egg-shaped, and lanceolate, or oblong and somewhat hairy or silky. The Ambiguous Willow is a small straggling shrub, about three or four feet high, its branches sometimes quite prostrate, at others rising a foot or two above the surface of the ground. Its young twigs are downy, its leaves thin, and the veins sunken above and prominent beneath, rendering the green part somewhat wrinkled. It varies much in the silkiness and downiness of its leaves, and has stalked upright cylindrical catkins. It is indigenous on gravelly heaths in Sussex, Essex, and Suffolk, and has been seen also in Perthshire, Aberdeen, Inverness, Angus, Caithness, Orkney, and the Hebrides.


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Group VII. Reticulatæ.—*Borr.*

Stamens 2; *capsules* crowded, sessile, downy; *stigmas* almost sessile; *catkins* cylindrical, terminal, stalked, appearing with the full-grown leaves; *leaves* roundish, with netted veins beneath. Dwarf alpine shrubs with the stem creeping below the surface of the ground.

18. *S. reticuláta* (Reticulated Willow, or Netted or Wrinkle-leaved Willow).—*Leaves* alternate, roundish, nearly smooth. This is a very remarkable willow, and quite unlike the other British species. It has a short, stout, woody, trailing stem, very much branched, and large handsome leaves of deep glossy green above, and sea-green tint or white beneath, very curiously netted, with an abundance of prominent veins, which are, on the under surface, sometimes of purple colour. The stems have also a reddish or purplish tinge, and the buds and catkins are often of deep purple. The latter appear in June and July. It is an alpine willow, occurring on elevated mountains of the middle and north of Scotland. It grows on the Pyrenees, and other mountains, above the limits of perpetual snow, and is found also in Arctic regions. Sir J. E. Smith quotes the remark of Lightfoot, that the soil of many of the Highland mountains on which it grows is micaceous.

Group VIII. Glaucæ.—*Borr.*

Stamens 2; *capsules* sessile, very downy or silky; *catkins* compact, appearing with the leaves. Small upright shrubs, mostly remarkable for their leaves, which are soft, hairy, silky, and generally white and cottony beneath.

19. *S. arenária* (Downy Mountain Willow, or Sand Willow).—*Leaves* between roundish egg-shaped and oblong lanceolate, cottony and sometimes silky beneath; *catkins* usually naked, rarely on leafy shoots. Some varieties occur in this species, differing in the form of the leaves, the degree of cottony or silky down, and in the length of the style in the flower. They have been termed *S. Stuartiána*, *S. limósa*, and *S. glaúca*. The Downy Mountain Willow is a somewhat large shrub, found in the Highland mountains, especially those of Clova and Breadalbane. The leaves are small, the upper surface of dark green, and in one form having sunken veins, while in others the surface is even. The upper part of the leaf, though more or less downy, is less densely so than the under part; and in the variety formerly described as *S. glaúca*, the upper side is of beautiful glaucous green, and under part white as snow, with a reddish midrib; in this form the leaves are about two inches long. The Stuart's Willow, or Small-leaved Shaggy Willow, has leaves shaggy above and densely silky or cottony beneath. The catkins appear in June and July.

Group IX. Viminales.—*Borr.*

Stamens 2; *capsules* either sessile or on short stalks; *catkins* nearly sessile, with leaf-like bracts at the base, appearing at the same time as the leaves. Trees with pliant branches.

20. *S. viminális* (Common Osier).—*Leaves* linear or linear-lanceolate, obscurely crenate, white and silky beneath; *stipules* nearly lanceolate, very small; *ovaries*

almost sessile; *stigmas* long and slender. This is one of the most common of our native Osiers, the word Osier being applied to those willows used in basket-work. It is largely cultivated in the Osier-holts or Willow-garths, as such grounds are called in Yorkshire, and it grows wild in many wet meadows—

> "Where the Willow keeps
> A patient watch over the stream that creeps
> Wanderingly by it."

Although the erect form of the branches of this tree renders it unattractive, yet the long narrow leaves are pretty, with their glossy satiny under surfaces. They grow almost erect, and are about six inches long, slightly waved or curled under at the edges, and of full green above. The numerous showy catkins adorn the boughs in April and May. The slight and twiggy branches of this osier are very valuable in basket-work, and the tree is often called Twiggy Willow. Its twigs have many rustic uses; for, as the old Italian proverb says, "Willows are weak, but they bend other wood," and many a schoolboy sits patiently by the river, when

> "The captive fish still fills the anxious eyes,
> And willow-wicks lie ready for the prize;"

or could say with Clare—

> "And oft with anxious feeling would I climb,
> The waving willow-row a stick to trim,
> To reach the water-lily's tempting flower,
> That on the surface of the pool did swim."

All sorts of baskets, from the rough hamper to the delicate work-basket of the lady's boudoir, are made of the boughs of this osier. If we were of Fuller's opinion we might look with satisfaction on the osiers, because,

as he quaintly says, "They in some sort saved the life of St. Paul, when he was let down by the walls of Damascus by a basket." The boughs are also often used for hoops.

21. *S. stipulāris* (The Stipuled or Aurieled-leaved Osier or Willow).—*Leaves* lanceolate, very slightly crenate, white and downy beneath; *stipules* large, half heart-shaped, acute, often with a tooth or lobe at the base; *ovaries* nearly sessile; *stigmas* long and slender. This, too, is a common tree in osier-holts, and grows in the hedges about Bury St. Edmund's, flowering in March. It has long, upright, soft and downy twigs, of a pale reddish-brown colour. Though nearly allied to the last, and differing in appearance chiefly in its larger, coarser leaves, which are also less white beneath, and in the stipules, which are very conspicuous on the under shoots, yet it is, for economic purposes, very inferior to the Common Osier on account of the brittleness of its twigs. The leaves are very abundant, about six inches long, with short fine down beneath, and a reddish or pale midrib.

22. *S. Smithiāna* (Silky-leaved Osier, or Smith's Willow).—*Leaves* lanceolate, slightly crenate, white and glossy beneath; *stipules* very small, narrow, acute; *ovaries* distinctly stalked; *stigmas* long and slender. This is common in wet woods, meadows, and osier-grounds, in some parts of the kingdom. Its branches are erect, round, slender, smooth, and when young slightly downy, and of reddish-green colour. The leaves are somewhat waved at the margin, three or four inches long, the upper surface green and soft, from a scarcely perceptible silky



down upon them, while on the under surface the silky down renders them white and glossy as satin; the midrib and veins are red. The catkins are small and numerous, appearing on the leafless branches in March and April. It is the *S. mollíssima* of some writers.

23. *S. acumináta* (Long-leaved Sallow).—*Leaves* lanceolate-oblong, pointed, wavy, finely toothed, glaucous, and downy beneath; *stipules* half egg-shaped; *ovary* distinctly stalked. This willow grows in hedges, and in

> "Many a woodland dim,
> 'Mid buried paths, where sleepy twilight dreams
> The summer time away,"

and where the stream is trickling to the tune of the rustling leaves. It is, perhaps, however, not truly wild. It is usually a low tree, rarely exceeding twenty feet in height; and the authors of the "British Flora" remark, that when in flower it can be distinguished from the two last species only by its shorter stigmas. Its cylindrical catkins appear in March and April. The branches are upright, soft, and downy; the leaves are about an inch broad, and three or four inches long, either flat or wrinkled, the upper side green, free from down, the under pale, or of sea-green hue, soft and downy, with a strongly marked somewhat red midrib and veins; the stout reddish footstalks being about half an inch in length.

24. *S. ferrugínea* (Ferruginous Sallow).—*Leaves* lanceolate, with wavy roundish notches and small teeth, hairy on both sides, paler beneath; *stipules* small, half egg-shaped; *ovaries* distinctly stalked. This species was

first observed near Carlisle in 1809, and has since been found in Fifeshire and other parts of Scotland, as well as on the banks of the Thames. Mr. Forbes, in the "Salictum Woburnense," thus describes it: "A bushy shrub, or low tree; flowering in April, and growing in the willow garden at Woburn Abbey to the height of twelve or fourteen feet, with shortish green fuscous branches, round, downy, and somewhat of a rusty hue while young, especially towards autumn; but of a more pale yellow in an earlier state. Leaves from two and a half inches to three inches long, lanceolate, tapering towards the base, with rather long oblique points; flat, downy, and dark-green above; densely silky, reticulated, and greyish beneath; lower leaves entire, scarcely an inch long, upper ones finely serrated towards the upper part, or rather furnished with minute distant glandular teeth, entire towards the base; the rusty hue is also visible on the lower leaves." The catkins of this species are from an inch to an inch and a half long, and appear in March and April.

Group X. Cinereæ.—*Borr.*

Stamens 2; *capsules* stalked, covered with silky wool; *catkins* thick, sessile, appearing before the leaves; *leaves* stipuled, very veiny beneath, more or less wrinkled. Trees or shrubs.

25. *S. holoserícea* (Soft Shaggy-flowered Willow).—*Leaves* lanceolate, taper-pointed, serrate, smooth above, pale, downy, and strongly veined beneath; *catkins* cylindrical; *scales* black, very shaggy. This Willow grows

wild about Lewes in Sussex, flowering in April and May. Its sessile and pale-coloured stigmas, and its leaves, green and wrinkled above, and strongly veined beneath, distinguish it from *S. acuminâta*, to which it is nearly allied, and of which it was formerly thought to be a variety.

26. *S. cinérea* (Grey Sallow).—*Leaves* inversely egg-shaped-lanceolate, autumnal ones pointed, even, serrated, netted with prominent veins, nearly smooth and glaucous beneath, with the margins sometimes rolled under; *stipules* rounded, toothed, upper ones often half heart-shaped; *style* very short or none. Varieties differing in the form and texture of their autumnal leaves, have been described as *S. aquâtica* and *S. oleifólia*. This is a very common willow in our wet hedgerows, and on the river brink, sometimes bordering the stream for a long distance with its bushy growths, being rarely more than seven or eight feet high. At other times, however, this Sallow rises into an erect tree, twenty or thirty feet in height, and its branches are either spreading, or they droop down, and almost touch the water—

> "Where hangeth down the old accustom'd willow,
> Hiding the silver underneath each leaf,
> So drops the long hair from some maiden's pillow
> When midnight heareth the else silent grief;
> There floats the water-lily like a sovereign,
> Whose lonely empire is a fairy world,
> The purple dragon-fly above it hovering,
> As when its fragile ivory uncurl'd."

We cannot, however, praise the beauty of this tree; neither is it one of the useful species, though its branches are woven into coarse wicker-work. It is distinguished from the other common Sallows by the rusty glittering

hue of its foliage. "This," Sir J. E. Smith says, "lies more perhaps in the fine veins of its leaves, than in the pubescence sprinkled over them, which consists of minute prominent shining hairs, totally unlike the depressed silkiness of some other willows." The rusty colour, indeed, increases after the specimens have been long dried; but is visible in some degree in the growing plant, especially towards the autumn.

The leaves of this Sallow are from an inch to an inch and a half in length, and they are sometimes blotched and variegated. The variety termed *aquática* has much broader and thinner leaves, of uniform dull grey hue, and without the rusty tint which distinguishes the ordinary form. Its branches and twigs are also very brittle. In the plant called the Olive-leaved Sallow, the leaves, which are when young densely hoary, gradually become green, and acquire the rusty hue; and they are throughout their growth of leathery texture, and not pliant as in the other varieties. The branches are rounded, and more or less hoary when young.

27. *S.aurita* (Round-eared Sallow, or Trailing Sallow). —*Leaves* inversely egg-shaped, with spreading teeth, wrinkled with veins, more or less downy, very downy beneath, blunt with a small hooked point; *stipules* roundish; *style* very short. This, too, is a common Sallow in our moist woods and thickets; and Mr. Borrer observes that "it is one of the least equivocal species." Its large stalked stipules, and its foliage blistered like a cabbage-leaf, form a marked character, although its leaves vary in size, and in the form of the outline. It sometimes becomes a bushy tree, but is more commonly



1 ROUND EARED SALLOW.
Salix aurita

2 GREATER ROUND EARED ,,
S. caprea

3 DARK LEAVED ,,

4 INTERMEDIATE WILLOW.

a shrub, about three or four feet high, having branches which trail to a great length along the ground, and entangle themselves among the neighbouring bushes. The leaves are on short downy footstalks, and are one or two inches long, and more or less contracted towards the base; the upper side is of dark green, the under paler and somewhat glaucous.

28. *S. caprĕa* (Great Round-leaved Sallow, or Goat-Willow).—*Stem* erect or drooping; *leaves* roundish, egg-shaped pointed, at first entire, downy above, woolly beneath, autumnal ones serrated, waved, nearly smooth above, downy beneath; *stipules* somewhat kidney-shaped, toothed; *style* very short or none. The willow sometimes called *S. sphaceláta*, from the discoloured points of its leaves, is a form of this; and *S. péndula*, the Kilmarnock Willow, is a variety with broad glossy leaves and drooping branches. The Goat Willow is truly beautiful in spring time, when, long before a leaf is on the branch, thousands of its catkins, like golden balls, are gleaming upon the naked boughs. How the early bees cluster about them, won by their fragrance to neglect the opening blue-bells and primroses; and how merrily the chiff-chaff, scarcely larger or less bright than themselves, utters his cry of welcome as he flits about them! Bishop Mant says of them:—

"But cautious of their germs, protrude
The brethren of the copse and wood;
For flower or leaf conspicuous most
The watery willows' spray, embost
With oval knobs of silky down,
Which soon in form of papal crown
Shall decorate the rustic stem
With many a golden diadem."

Children and country people call the boughs, when covered with their catkins, "Palms," and many a country child goes forth to gather them, as we have often done, during the week preceding Palm Sunday, with some vague fancy that these willow-boughs were strewed by the joyful children who shouted the loud hosannas to the Saviour, when he entered Jerusalem. This palm-gathering is a remnant of an old Catholic superstition, a relic of times when the pilgrim bore from the Holy Land a palm-branch, to prove that he had won rightly the name of Palmer, and had wandered over the very spots once trodden by our Lord and his disciples. In later years willow-branches were blessed by the priests; but why, in this country, the willow and this particular species should have been chosen to represent the palm-branch, is not very obvious, though it is certainly not from any resemblance between the two trees. The chief reason, perhaps, was that the two plants were associated together, in the direction given to the Israelites, when desired to make booths for that out-of-door rejoicing, so suited to a bright climate, and to the joyous spirits which such a climate induces. When they celebrated the Feast of Tabernacles, they were to gather "the boughs of goodly trees, branches of palms, and the boughs of thick trees and willows of the brook, and to rejoice before the Lord their God seven days."

The Goat Willow, or Grey Willow, or Saugh, as it is often called, would probably be preferred to the other willows, too, because of its beauty at the season when country people go palming or palmsing, as it is termed. In some parts of Kent this practice is still very common,

and men and boys come in from the country to the towns, on Palm Sunday, wearing the golden catkins in their hats, and carrying the blooming wands in their hands. The custom was much more general a few years since than it is now, near the metropolis, and the willow-boughs were usually exposed for sale in Covent Garden market on the Saturday before Palm Sunday. In some parts of Germany, as about Munich, the peasants on Palm Sunday may be seen on the road approaching the town, bearing in their hands the branches of willow catkins, mingled with holly and mistletoe; for the latter plant is, in Germany, connected with usages of religion. The catkins are blessed by the priest, and are termed by German children as by English ones, Palms. As Goethe says:—

"In Rome upon Palm Sunday,
They bear true palms;
The Cardinals bow reverently,
And sing old psalms:
Elsewhere their psalms are sung
'Mid olive-branches:
The holly-bough supplies their places
Among the avalanches:
More northern climes must be content
With the sad willow."

The idea of the sadness of the willow is a very old one, and we find it alluded to by our prose writers and poets long before the introduction into this country of the tree called the Weeping Willow. It probably originated in a Scriptural association, and has come down to us from those times when captive Israel hung their harps on the willows, and wept because asked to sing "the Lord's song in a strange land." It is a touching

episode in their history, and one which has appealed to the hearts of all who have loving memories of their home, their country, and their God. So general is the idea of the sadness of the willow, that to "wear the willow" has become a familiar proverb. Old Fuller, referring to the willow, says: "A sad tree, whereof such as have lost their love make their mourning garlands; and we know that exiles hung their harps on such doleful supporters." He adds, that it grows so incredibly fast that there was a "bye-word in Buckinghamshire, that the profit by willows will buy their owner a horse, before that any other tree will pay for his saddle." "Let me add," he says, "that if greene ash may burne before a queene, withered willows may be allowed to burn before a lady." Chatterton has a song, of which the burden runs thus:—

"Mie love ys dedde,
Gon' to his deathe bedde
Al under the wyllowe-tree."

Herrick, too, says of the willow:—

"Thou art to all lost love the best,
The only true plant found,
Wherewith young men and maids, distrest
And left of love, are crown'd.

"When once the lover's rose is dead,
Or laid aside forlorn,
Then willow garlands round the head
Bedew'd with tears are worn."

The Goat Willow was so called, because goats are said to be fond of its catkins. It is a somewhat small tree, with spreading branches of purplish-brown colour, which when young are covered with soft down. The leaves

are two or three inches long, and are among the broadest of any of the genus. They are, on the upper surface, of rich bright green, and are beneath either of pale sea-green, or quite white with soft white cottony down, and they have waved margins and soft downy stalks. In March and April the leafless boughs are laden with the abundant yellow, almost globular, fragrant catkins.

This is a useful willow, for its tough white wood is employed in making handles for agricultural implements, and for hurdles and other rustic purposes; and when burnt it yields good charcoal for the manufacture of gunpowder. It is thought to furnish one of the best underwoods for coppices, and good fences are made of it, which will grow well either in wet or dry soils; though the tree, when wild, is usually found in woods and dry pastures, and seldom occurs near rivers. The bark affords an excellent tonic medicine, and it is also used by the Highlanders to tan leather.

The very beautiful variety of this tree, the Kilmarnock Willow, has of late years much interested botanists. It received its name, not because peculiar to the place, but because reared in the nursery garden there. An enthusiastic botanist of Ayr, Mr. James Smith, sent to Mr. Lang of Kilmarnock, about seventeen years since, a plant of this beautiful tree. He did not state on what spot he found it, and as he died shortly afterwards, the locality in which it grew remained unknown; though, as the Goat Willow is a common plant all over Scotland, he, in all probability, found the variety growing wild. Mr. Lang, at a later season, had procured from Mr.

Smith a few more plants, which he has since been engaged in propagating; and, in 1852, nearly a thousand plants of this beautiful willow were purchased from him by Sir W. J. Hooker, for the botanic gardens of Kew.

This variety of the Willow has broad, glossy, deep green leaves, and it flowers very freely in spring. Its branches are stouter than those of the Weeping Willow (*S. Babylonica*), but it is a true weeping species, its branches always bending gracefully down; and it is the only native willow which really deserves to be so called, for the willows so often overhanging streams in gardens and parks are species introduced from other lands. The Weeping Willow (*S. Babylonĭca*) was probably brought into this country by Tournefort, though often said to have been first planted by Pope at his villa at Twickenham. This graceful tree is grown now in all European countries, as well as in Asia and Africa. The Chinese greatly esteem it in their ornamental scenery, as we may see by their pictures and porcelain; and in Arabia, on festive occasions, a sprig of this willow is placed among the bouquets of lilies and orange flowers, and is the favourite symbol of a graceful woman. It is somewhat doubtful whether this is the species on which the Israelites hung their silenced harps, for the Euphrates is bordered by many pale grey-green osiers; but Celsius believes this to be especially the "willow by the brook," intended by the patriarch Job, when he says of Behemoth, "The shady trees cover him with their shadow; the willows of the brook compass him about." A variety of this tree, called Napoleon's Willow, from its growth near the tomb of that hero at St. Helena,

is often seen in gardens; and we have also an American Weeping Willow.

Group XI. Phylicifoliæ, Nigricantes, and Bicolores.—*Borr.*

Stamens 2; *capsules* stalked; *style* long; *catkins* lateral and sessile, or on short bracteated stalks; *leaves* toothed or serrated; *stipules* with glands inside, or at the base. Shrubs or small trees.

29. *S. nígricans* (Dark-leaved Sallow).—*Young shoots* thickly downy or hairy towards the summit; *leaves* usually dull green, glaucous beneath, and becoming black when dry. Several varieties of this Willow, differing in having prostrate or erect stems, in the downiness of the branches, in the smoothness or silkiness of the ovaries, and somewhat in the outline of the leaf, have been described as *S. cotínifolia*, *S. Forsteriána*, *S. rupéstris*, *S. hírta*, *S. Andersóniana*, *S. Damascéna*, or *S. petræa*. Sir William Hooker and Dr. Arnott remark that there are, besides, numerous intermediate forms in this most variable species of Willow; but add, that in all native specimens, whether cultivated or wild, the foliage constantly turns black, when pressed and dried, however carefully it may be done.

The Dark-leaved Willow is a large bushy shrub, scarcely ever attaining the height or form of a tree. Its branches are round, and usually rather brittle, except in the variety with trailing stems, sometimes termed *S. rupéstris*, in which the branches are tough. The

catkins appear in April. The plant is not one of our useful or ornamental Willows. It is common on mountains, chiefly in the north of England and Scotland, and grows also in osier-grounds, and on river-sides and moist lands.

30. *S. laúrina* (Intermediate Willow).—*Young shoots* and *leaves* densely downy or hairy towards the summit; *leaves* finally becoming smooth, glaucous beneath, dull green above; after drying, the young ones only becoming sometimes slightly black. Several forms of this species occur, differing in the degree of hairiness of the ovaries, and the shape and hairiness of the leaves. These have been described as *S. propínqua*, *S. ténuior*, *S. bícolor*, or *S. tenuifólia*. This Willow has much the same dull appearance as the last, and its leaves are thin. It is a shrub, or sometimes a small tree, occurring in woods and thickets or by river-sides, in several parts of the kingdom, especially in England.

31. *S. phylicifólia* (Tea-leaved Willow).—*Leaves* and *shoots* soon quite smooth, the latter dark-green, rigid, glossy above and glaucous beneath, not black when dried; *stigmas* entire or 2-cleft. This Willow is, in each of its forms, a twiggy bush. A very large number of plants now included under the same name were formerly considered distinct species; they differ in the form and relative length of the stigma and style, in the degree of silkiness of the ovaries, and in the exact shape of the leaves. They have been termed *S. radícans*, *S. Davalliána*, *S. Weigeliána*, *S. amœ́na*, *S. nítens*, *S. Croweána*, *S. Dicksónia*, *S. laxiflóra*, *S. tetrápla*, *S. Borreriána*, and *S. phyllyreifólia*. They grow chiefly in valleys in



EA LEAVED WILLOW
Salix phyl
SMALL RED W
S. arbu
RLEN WIORT LEAVED W
S.

mountainous districts, attaining, in some cases, as in the variety which has been termed *S. Borreriána*, the height of ten feet; but in general they are quite low shrubs. The leaves vary in length and outline, not only in the different varieties, but they are said, by the authors of the "British Flora," to vary even on the same bush. The catkins appear in April and May.

Group XII. Vacciniifoliæ.—*Borr.*

Stamens 2; *ovaries* densely downy, nearly sessile; *style* as long as the stigma; *catkins* compact, appearing with the leaves, terminal or on short few-leaved lateral shoots; *leaves* more or less veiny above; *stipules* none or minute. Small, erect, or spreading, rarely prostrate shrubs; *stems* above ground.

32. *S. arbúscula* (Small Tree Willow).—*Leaves* lanceolate-egg-shaped, or broadly or roundish egg-shaped, finely serrated. In one variety opaque above, and of a sea-green hue beneath; in another, prominently veined above, green, but scarcely shining on both sides. The forms included in this description are those which have been termed by various writers *S. myrsinítes*, *S. vaccinifólia*, *S. venulósa*, *S. carináta*, and *S. prunifólia*. They differ in the outline, in the degree of silkiness of the leaves, and in the more erect or prostrate growth of the stem. The Small Tree Willow is not unfrequent on Highland mountains, and is usually a very low shrub, with red or green branches, more or less trailing, but sometimes erect. The leaves are often folded so as to

form a keel; in other cases they are flat and narrow. The catkins appear in June and July.

Group XIII. Myrsinites.—*Borr.*

Stamens 2; *ovaries* silky, stalked; *catkins* appearing with the full green leaves, terminal on lateral or terminal leafy shoots, soon becoming lax; *leaves* veiny, never glaucous beneath; *stipules* egg-shaped or lanceolate. Small much-branched shrubs; *stems* above ground.

33. *S. myrsinítes* (Green Whortle-leaved Willow).—*Leaves* waved, serrated with very prominent veins, often hairy, at length shining; blackish when dried; in one variety roundish or elliptical, or inversely egg-shaped; in another, smaller and somewhat heart-shaped at the base; in another, egg-shaped or oblong and acute. This description includes the variety which has been described as *S. arbutifólia*. This is a low shrub, occurring but rarely on the Highland mountains. Its leaves are of a bright and glossy green, varying both in form and size, and the short catkins appear in June. The whole plant is very black when dry.

34. *S. procúmbens* (Smooth-leaved Alpine Willow).—*Leaves* oval, rarely acute, obscurely serrated, shining, quite smooth, not black when dried; *catkins* long; *style* cloven to the middle or below it, as long as the stigmas. This Willow, which is the *S. retúsa* or the *S. lævis* of some writers, is a low shrubby plant of the Scottish Highlands, its short round downy branches being of a greenish hue. Mr. Forbes describes its leaves as from one inch to an inch and a half long, and upwards of an



1 SMOOTH LEAVED ALPINE WILLOW
Salix procumbens

2 TAIT W.
S herbacea

3 APPLE LEAVED W
S

4 WOOLLY BROAD LEAVED W
S

inch broad, hollowed out, or somewhat heart-shaped at the base, serrated, bright green, shining, and always perfectly smooth. It bears its large long catkins in June. It has for many years been cultivated in gardens, where it is a very ornamental shrub.

Group XIV. Herbaceæ.—*Borr.*

Stamens 2 ; *ovaries* shortly stalked ; *style* as long as the stigma; *catkins* appearing with the full-grown leaves, terminal, few-flowered ; *leaves* roundish, serrated, with prominent veins, smooth but not glaucous. Dwarf alpine prostrate shrubs, the stems creeping below the surface.

35. *S. herbácea* (Least Willow).—*Leaves* roundish, serrated, smooth, shining, veined; *ovaries* smooth. This little plant is interesting for its beauty, as well as because it is the smallest not only of its tribe, but of all our native trees. It grows on Snowdon and other Welsh mountains, being abundant on those of the Highlands of Scotland, and is found in many parts of Europe and North America. In Great Britain it is the last plant with a woody stem which greets the traveller who ascends mountains, and few of our heights of eight or nine hundred yards elevation are without it. It is usually about four inches high ; but Sir W. J. Hooker remarks that it is not quite so small as is usually supposed, for its stems divide, and creep below the surface of the earth. As Dr. E. D. Clarke said of it, it is a perfect tree in miniature ; and root, trunk, and branches may all be laid between the leaves of a pocket-book. M. De Candolle observes that in Switzerland "some

speeies of Willow spread over the uneven surface of the soil; and as their braneles are often eovered with the earth whieh the heavy rains wash over them, they present the singular phenomenon of trees which are more or less subterranean. The extremities of these braneles form sometimes a kind of turf; and the astonished traveller finds himself, as we may say, walking on the top of a tree." It is the *S. herbácea* whieh most frequently presents this appearance, as it often grows on steep slopes of loose soil, particularly among the fragments of cistus, whieh are readily penetrated by the melting snow and rain. This Willow is used by the Laplanders in tanning leather.

Group XV. Hastatæ.—*Borr.*

Stamens mostly 2; *anthers* permanently yellow; *ovaries* smooth; *style* long; *stigmas* entire or 2-cleft; *catkins* appearing before the leaves, sessile, terminal and lateral, large, blunt, with very shaggy and silky seales; *leaves* large, glaueous beneath; *stipules* large on the autumnal shoots. Shrubs with numerous irregular, crooked braneles, and hairy young shoots.

36. *S. hastáta* (Apple-leaved Willow).—*Leaves* egg-shaped, acute, serrated, waved, crackling, smooth, heart-shaped at the base, glaueous beneath; *stipules* unequally heart-shaped, longer than the broad footstalks; *catkins* very woolly; *ovaries* distinetly stalked. Although this Willow is usually elassed with the British speeies, yet it can hardly be considered as even naturalized in the few spots on whieh it has been seen. It was discovered by

Mr. F. Drummond beside a small stream that passes through the sands of Barrie near Dundee, and has been said to grow near Norfolk. The authors of the "British Flora" remark, "It is most improbable that this plant, which is truly alpine on the Continent, growing in Switzerland only at great elevations, should be naturalized on the sands of Barrie, and the Norfolk station is entirely hypothetical, and extremely unlikely."

This species, which is sometimes termed *S. malifólia*, has shining leaves, three inches long and about half as wide, and blackish branches, and has more the appearance of an apple-tree than a willow. Its stem, in its wild state, is usually one or two feet high; but when cultivated, the plant becomes a small spreading tree, about six feet in height. It bears, in May, very compact shaggy catkins, densely covered with silvery hairs, and about an inch and a half long.

37. *S. lanáta* (Woolly Broad-leaved Willow).—*Leaves* broadly oval, pointed, entire, shaggy; *stipules* oval, pointed, entire; barren catkins covered with yellow silky hairs; *ovaries* almost sessile. This species is sometimes called the Golden Willow (*S. chrysántha*), on account of the beautiful golden catkins which in May and June ornament its boughs, while the young leaves are just expanding. Wahlenberg says of this Willow, that it is the most beautiful one in Sweden, if not in the whole world. "The splendid golden catkins," he remarks, "at the ends of the young branches, light up, as it were, the whole shrub, and are accompanied by the tender foliage, sparkling with gold and silver." The stem is about three or four feet high, with numerous

irregular branches, which, while young, are downy. Its leaves are wavy at the edge, from an inch and a half to two inches and a half long, very grey, and almost white with the long, soft, silky hairs, which entirely cover the upper surface, while the sea-green tinted under surface is beautifully netted with veins. The catkins are thought to yield more honey than those of any other species, and perhaps they would serve the same purpose as those of the celebrated little willow called in the East *Calaf*, from whose blossoms a medicinal and fragrant water is distilled. The Woolly Broad-leaved Willow is a rare plant of the Scottish mountains.

5. Populus (Poplar).

1. *P. álba* (Great White Poplar, or Abele).—*Leaves* roundish, heart-shaped, lobed and angularly toothed, cottony and perfectly white beneath, those of the young shoots heart-shaped, 5-lobed; *leaf-buds* downy; *scales of the catkins* notched at the end. This handsome species is a doubtful native of this kingdom, though in many a mountain wood

"The poplar, that with silver lines his leaf,"

may be seen towering above the other trees, attaining the greatest luxuriance where the soil is moist. In many places it is planted for the contrast afforded by its dark-green foliage, varied with the white under surface, and having the old name of Dutch Abele, it was probably brought into this country from Holland. It is of very rapid growth, making, in favourable situations, shoots three inches in diameter, and sixteen feet long, in a single season; and is sometimes eighty or ninety feet


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1

high. Bailey has referred to the tall poplars which overtop their leafy companions :—

"The black yew hedge, like a beleaguering host,
Round some fair garden province; here and there,
The cloud-like laurel clumps sleep soft and fast,
Pillow'd by their own shadows; and beyond,
The ripe and ruddy fruitage; the sharp firs
Fringe like an eyelash on the faint blue west;
The oaks which spread their broad arms to the wind,
And bid storms come and welcome—there they stand,
To whom a summer passes like a smile;
O'er all, the giant poplars, which maintain
Equality with clouds halfway up heaven,
Which whisper with the winds none else can see,
And bow to angels as they wing by them."

In April we may see the fertile catkins of this Poplar, which are about three inches long, and the shorter barren ones appear soon after. In a few weeks the seeds ripen, and they with their cottony tufts lie scattered around the tree, accounting for the Arab name of the White Poplar, *Shairat-al-bak* (the Gnat, or Fly-tree). The young shoots of this Poplar have a purplish tinge, and are thickly invested with the downy covering, and the full-grown leaves are on footstalks, about an inch long, and when old, sometimes smooth on both sides.

The characteristic name of White Poplar, referring to the hue both of the seed tufts and the leaves, has its synonym in various parts of the world. In France, the tree is called *Blanc de Hollande*, and *Peuplier blanc*; and in Germany, *Weisse Pappel*, *Silber Pappel*, *Weisse-aspe*, and *Weissalber Baum*; while it is the *Abeel-boom* of the Dutch, from which latter name our Abele is

probably derived. Large numbers of these trees grow on the borders of the Tigris and Euphrates, and some commentators have thought this Poplar to be the Abeel-shittim of Scripture, from which the Shittim-wood was obtained. There is good reason, however, for believing that this was the wood of the *Acacia Seyel*, a plant fragrant enough to be suitably associated with the other odoriferous shrubs in that glorious promise yet to be fulfilled, when God has declared that He will plant in the wilderness the Cedar, the Shittah, the Myrtle, and the Oil-tree. Dr. Royle thinks that our White Poplar is, in all probability, the plant referred to by the prophet Hosea, when he says, "They sacrifice upon the tops of the mountains, and burn incense upon the hills under oaks and poplars." The Septuagint renders the latter, "white poplars," and our Abele is a common tree in many of the countries mentioned in Scripture history. Belon remarked that the white and black poplars, with some fruit-bearing trees, render the plain of Damascus like a forest; while the white species is frequent about Aleppo and Tripoli, and is still called by one of its ancient Arabic names, *Haur* or *Hor*, which is the word used in the Arabic translation of the passage in Hosea.

Whether this Poplar is, or is not, truly indigenous to this kingdom, it is now very generally distributed. It is a native of most European countries, and is usually found in woods and thickets in which the soil is somewhat moist. Turner, writing in 1568, says that the White Aspe is plentiful in Germany and Italy, but that he does not remember ever seeing it in England; but Gerarde, who published his Herbal about thirty years

after, remarked that it grew in a few places in the kingdom; and Evelyn says that the tree had of late been much transplanted from Holland.

This Poplar is, in some country places, called Rattler, from the quick movement of its leaves. Its young buds have in spring time a very pleasant balsamic odour, and afford a resinous substance resembling storax; but this is yielded in far greater quantity by the Canadian Balsam Poplar, and is used medicinally. Several attempts have been made to manufacture paper from the white cottony seed-tufts, and cloth has been made from it. Pallas endeavoured to prove that the cotton was of equal worth to that of the cotton plant, but it is far inferior. Thin slips of poplar wood, called in France *Sparterre*, are woven into those delicate bonnets so commonly worn on bridal occasions, and known as chip bonnets by ladies. These have been hitherto made from the Lombardy Poplar, and have been of foreign manufacture; but it has recently been found that from our own Poplar-tree a fabric may be produced quite equal to the foreign kind. It has not as yet, however, been woven into the chip bonnet, though extensively used for fancy plaitings of various sorts. The leaves of the tree are, in Sweden, eaten by cattle.

The ancients believed that amber was formed of the clammy substance which dropped from the poplars into the river. Hence our old poets refer to this idea; and Prior says—

"For thee the poplar shall its amber drain."

Ancient poets also described Hercules as wearing a wreath of White Poplar, and those who offered sacrifices

to this hero placed its leaves around their brows. The tree is much used on the Continent for planting by the sides of roads, for its foliage does not prevent the access of light and air, while it is very ornamental when mingling with the dark-leaved Black Poplar, and the grey tint of the Willows. In some parts of France it also grows wild in forests, so abundantly as to give a peculiar character to the scenery. Its wood, like that of all the Poplars, is well suited for heating ovens, and it is largely so used in France, where the Parisian baker knows it as his *bois blanc*. The wood of this species is not so hard as that of the Grey Poplar, and is chiefly used for coarser work, or in the manufacture of children's toys.

2. *P. canéscens* (Grey Poplar).—*Leaf-buds* downy, but not clammy; *leaves* roundish, deeply waved, toothed, lobed only when young, hoary and downy beneath, old ones sometimes smooth; *stigmas* 8, purple; *scales of catkins* deeply cut. This tree, though a doubtful native, is common in several parts of this kingdom, especially in Norfolk in wet meadows, and also on dry heathy places. The authors of the "British Flora" remark, that it is usually confounded with the last on account of its downy leaves, though Dr. Bromfield regards it as a variety of the Aspen. It is a tall and handsome tree, with the usual graceful motion of the tribe when stirred by the wind; the under surface of its leaves is of a greyish tint, and not quite of the snowy whiteness of the foliage of the Abele. It is of slower growth than any other of our Poplars, and yields the best wood of them all. The boarded floors, which still in Norfolk retain their old Norman name of *planchers*, are commonly

made of it; and it is thought for many purposes to be scarcely inferior to the wood of the Norway fir. Sir J. E. Smith says that it will not readily take fire like resinous woods.

3. *P. trémula* (Aspen, or Trembling Poplar).—Young *branchlets* hairy; *leaves* roundish, toothed, downy when young; *footstalks* flattened. Who of us, accustomed to notice plants, has not, on a summer day, at some time or other, looked up wonderingly into the Aspen tree, when it was quivering and rustling into gentle music, and marvelled where was the breeze which bade it answer to its touch? It must indeed be a dead calm, when Thomson's description could be true:—

> "A perfect calm; that not a breath
> Is heard to quiver through the closing woods,
> Or rustling turn the many twinkling leaves
> Of aspen tall."

How often, as we have looked upon its tall, slender canopy of drooping branches, rustling so tremulously, has the mind recurred to the old associations connected with the tree! The ancients are said to have called the Poplar *Populus*, the Tree of the People, because its readily moved and ever-stirring leaves were, like the ever-restless multitude, quickened into action by the slightest breath; and a poplar of one species or another has always been regarded in modern times as the Tree of the People. It may not have been the Aspen Poplar especially, to which the ancients referred, though this is the most easily moved by the zephyrs of any of the species; but there is good reason for believing that it is the plant intended by the Scripture writer of a passage

of David's history, though rendered by our translators by another name. "Let it be," said the great Jehovah to the Israelitish warrior, "when thou hearest the sound of a going in the tops of the mulberry-trees, that thou shouldst bestir thyself;" but it was perchance to the quivering Aspen, which adorns so plentifully the ravines of Palestine, that David looked for the indication. The ancients, too, said of the foliage, that it might be likened to the unceasing course of time. Pliny remarks, "As for the Aspen-tree, or White Poplar, it maketh little or no shade at all, the leaves keep such a wagging and trembling." Old Gerarde, too, with little gallantry, refers to the restless leaves, and says, "It may be called Tremble, after the French name, considering it is the matter whereof women's tongues were made;" but he takes care to shield himself from some replying woman's tongue by adding, that, "as the poets and some others report, these seldom cease wagging." Our earliest poets, as well as the moderns, refer to it. Chaucer says—

"And quake as doth the leaf of aspen green;"

while Spenser tells of one—

"Whose hand did quake
And tremble like the leaf of aspen greene."

Indeed, to "shake like an aspen" is one of our oldest English proverbs. In our own days, many poets allude to its movement. Leyden says:—

"Again beside this silver riv'let's shore,
With green and yellow moss-flowers mottled o'er,
Beneath a shivering canopy reclined
Of aspen-leaves, that wave without a wind,
I love to lie when lulling breezes stir
The spiny cones that tremble on the fir."

Miss Jewsbury, too, looked on the Aspen to draw a lesson from its restlessness, which we might well take to our hearts :—

"I would not be
A leaf on yonder aspen-tree,
In every fickle breeze to play
So wildly, weakly, idly gay,
So feebly framed, so lightly hung,
By the wings of an insect stirr'd and swung;
Thrilling even to a red-breast's note,
Drooping, if only a light mist float;
Brighten'd and dimm'd like a varying glass
As shadow or sunshine chance to pass.
* * * * * *
Spirit, proud spirit, ponder thy state,
If thine the leaf's lightness, not thine the leaf's fate;
It may flutter and glitter, and wither and die,
And heed not our pity, and ask not our sigh;
But for thee, the immortal, no winter may throw
Eternal repose on thy joy or thy woe;
Thou must live—live for ever, in glory or gloom,
Beyond the world's precincts, beyond the dark tomb;
Look to thyself, then, ere past is Hope's reign,
And looking and longing alike are in vain;
Lest thou deem it a bliss to have been, or to be,
But a fluttering leaf of yon aspen-tree."

There is a tradition among the Highlanders that the cross was made of the wood of this poplar; and Mr. De Quincey says, that the legend is "European, or rather co-extensive with Christendom, that it shivers mystically in sympathy with that mother tree, which was compelled to furnish the materials for the cross." Yet an old notion was once very prevalent that the cross was formed of four pieces of wood, signifying the four quarters of the globe; and the palm, cedar, olive, and cypress were believed by some to be the chosen trees, while others substituted

the pine and box for the cedar and palm. Our fathers certainly ought to have known of what wood it was made, if portions of this sacred relic were as common in other places as they were at Bury St. Edmund's, where the visitors who went to examine into the state of the monastery, at the time of the Reformation, found "peces of the holy cross, enough to make a hole crosse."

But we are wandering away from the Aspen, which grows very rapidly, and when at its full height is a middle-sized tree, with a trunk free from branches, and covered with a smooth grey bark, which cracks as it grows older. The young tough and pliant shoots are of a reddish-green colour, and when the Aspen is old its branches often droop. The leaves are of a paler green beneath, and a bright glossy green above, varying much in outline. The margin is somewhat waved, and the footstalk often longer than the leaf itself. This footstalk is flattened vertically at the upper part, and by this form counteracts the ordinary waving motion of leaves in the wind, and hence the quivering movement. This is the earliest flowering Poplar, its catkins appearing in March. It will, in dry soils, live many years, but it never attains the size of the Abele. The roots lie very near the surface of the soil, and were considered by Dr. Withering so to impoverish the land as to prevent other plants from thriving near it; and he thought, too, that the leaves destroyed the grass. The foliage of the Aspen is, however, in countries where it is abundant, of much value as food for cattle, and both in France and Germany it is used for this purpose, both when green and dried. Many owners of these trees, cut regularly, every two

years, the leaves and spray, and sheep are so fond of this food that the foliage sometimes constitutes the chief worth of the aspens. The tendency of the wood of this tree to crack and split lessens its value, but it may be employed in buildings in dry places, and is well fitted for heating ovens; while, being white and tender, it is used by turners, and the white pails which hold the whiter milk of the dairy are often made of aspen wood. It serves for clogs and sabots, and is of old repute as the best wood for the making of pattens. This last manufacture has, for some years past, been on the decline, for pattens are now but of rustic use, though even at the commencement of the present century, they were commonly worn in wet weather by ladies. But in past times pattens formed part of a gentleman's daily costume; and Camden, in his "Remains," tells how "their shoes and pattens are snowted and piked, more than a finger long upwards." The church of St. Mary's-at-Hill, whose old records still bear evidence of many a long discarded usage, has its item in 1491, for "ij paire of pattens for the priest." Mr. Albert Way mentions that, in 1464, the craft of "patyn makers" petitioned the Crown that the statute of the 4th of Henry V. which forbade them to use the wood of the aspen-tree, as being that which was used by the fletchers, might be repealed; representing that "it was the best and lightest timber to make of patyns and clogges."

The bark of the Aspen is somewhat astringent, and, as well as that of the White and Black Poplars, has been used for tanning. In the Highlands of Scotland it is sometimes burned for torches. When powdered, the

bark is given as a medicine to domestic animals; and in Russia, where the tree is frequent, this bark is commonly prescribed by the physician to his patient.

The Aspen grows in high latitudes, and is found near the Frozen Ocean, while it is abundant also throughout Southern Europe, and in Asia Minor, usually preferring low soils, but found on some of the highest mountains of Scotland. It is called by the French, *Le Tremble*, and by the Italians, *La Tremella*, as well as *L'Alberallo* and *L'Alberetto*. The Germans term it *Zitter-happel*, and *Espe;* and the last name is probably the origin of our Aspen and Aspe. In Norfolk, the tree is commonly called Ebble. It is thought by some botanists to be the only species of poplar indigenous to this kingdom.

4. *P. nígra* (Black Poplar).—*Leaves* triangular, narrowing to a point, serrated and smooth on both sides; *stipules* egg-shaped and pointed; *stigmas* 4, simple, spreading; *scales of the catkins* cut into segments nearly to the middle. If we happen to glance from the Abele, when the wind turns up its white leaves, and then look at the Black Poplar, we are ready to admit the appropriateness of the name of the latter tree. The bark, which is at first of a dim ash-colour, deepens into black as it becomes older, and the leaves are dark green, and form a striking contrast to the whitened under surface of those of the Abele. Its leaves, like those of all the poplars, are very tremulous, and they served Homer, as well as many a modern bard, for a simile :—

"Like poplar-leaves when zephyrs fan the grove."

Wilcox thus describes the calmness of summer noonday :—

"O'er all the woods the topmost leaves are still;
E'en the wild poplar-leaves, that, pendent hung
By stems elastic, quiver at a breath,
Rest in the general calm. The thistle-down
Seen high and thick by gazing up, beside
Some shading object, in a silver shower
Plumb down and slower than the slowest snow
Through all the sleepy atmosphere descends;
And when it lights, though on the steepest roof,
Or smallest spire of grass, remains unmoved."

This tree is not erect and spiry, like the Lombardy or Italian Poplar (*P. fastigiáta*), which is believed to be but a variety of it. It has wide spreading branches, forming a good extent of leafage, and is a very large tree, sometimes larger even than the Abele. It has been known in this country to reach the height of ninety feet, and may often be seen seventy or eighty feet high. Though it is not likely that this Poplar is indigenous, it is now very common by river-banks, and on other moist lands. It well answers the purpose of the planter, for it bears lopping, and, both in France and Italy, it is commonly pollarded, and used as a support to the trailing vines. It looks very well in the spring, as its catkins, which are to be seen in March and April on the leafless branches, are of a dark rich red colour, and are very welcome to the insect race; and in May, the foliage is beginning to clothe the boughs. By the end of this month the catkins have ripened their seeds, and away they float on the winds, or lie whitening the ground beneath by the cottony down with which they are invested, and which has been used in the manufacture of paper, and is wrought, in Germany, into a kind of wadding as well as into hats. It is, however, borne

away so readily by the breeze, that it requires much pains to collect enough for any useful purpose. The leaves and young shoots are eaten by the beaver; and in Russia the bark is powdered, and given as food to sheep; while, both in that and this country, it has been used in tanning leather. The poor in Norway and Kamschatka often make their bread of the dried bark of the Poplar. The wood is yellow, soft, and fibrous, and furnishes the materials for some light articles, as clogs and bowls.

This Poplar has in summer large drops of clear water lying upon its leaves, and these only need some stirring wind to send them trickling down to earth, and to remind us of Spenser's description :—

> "The poplar never dry."

The ancient poets fabled that these drops were the tears of the sisters of Phaeton, who, wandering by the sides of the Po, were changed into trees :—

> "And eke those trees in whose transformed hue
> The Sun's sad daughters wail'd the rash decay
> Of Phaeton, whose limbs with lightning rent,
> They gathering up with sweet tears did lament."

The crushed buds of this Poplar yield a pleasantly fragrant substance, which burns like wax, and which was believed by our old herbalists to be a vegetable remedy of great power in various diseases. The young shoots are used in wicker-work; or, stripped of their leaves, serve the housewife for brooms.



1 COMMON BEECH
Fagus sylvatica

2 SPANISH CHESNUT.
Castanea vulgaris

6. Fágus (Beech).

1. *F. sylvática.*—*Leaves* egg-shaped, smooth, very slightly toothed and fringed at the margin. A green and full shadow is afforded to the country rambler by the crowded and usually straight branches of the Beechen tree, covered in summer with a profusion of thin leaves, among which many a gay bird is fluttering. Its boughs have long been celebrated for the shelter which they have given to heroes, to poets and shepherds, and the classic reader would, in some moods of mind, agree with Cowper—

> "Heroes and their feats
> Fatigued me, never weary of the pipe
> Of Tityrus, assembling as he sang
> The rustic throng beneath his favourite beech."

As Campbell had his valued Beech-tree, which he had watched for "twenty summers," so Virgil loved one, too, for the abundant shadow which it gave him. Many are the single or grouped trees which have been celebrated for interesting associations, like the Burnham beeches, beneath which Gray wandered to be soothed in his musings by the gentle whisperings of the "nodding beeches," and which, he says, "are always dreaming out their old stories to the winds." Then there are Sacharissa's beeches at Penshurst in Kent, the trees which Waller apostrophized in the inflated language so remote from the utterances of feeling, that it awakens no sympathy for his unrequited affection:—

> "Ye lofty beeches, tell this matchless dame,
> That if together ye fed all one flame,
> Ye could not equalize the hundredth part
> Of what her eyes have kindled in my heart."

The Purley beeches, believed to have grown in the time of the Conquest, are interesting trees, as is that venerable tree of Windsor Forest, which Strutt has engraved in his "Sylva Britannica," and which, older still, is supposed to have reared its head in the time of the Saxon kings. Camden describes it as "growing on a high hill (Sunning Hill), and overlooking a vale lying out far and wide, garnished with corn-fields, flourishing with meadows, decked with groves on either side, and watered with the Thames." This tree was found to measure thirty-six feet in circumference, at thirty feet from the ground. The tree called Pontey's Beech, at Woburn Abbey, is a hundred feet high; and instances are recorded of noble trees exceeding even this in magnitude. If we may believe Fuller, Buckinghamshire takes its name from the abundance of the Beech, which was called by the Anglo-Saxons *Buchen;* and "Buchen hum," the home or land of Beeches, was then appropriate. The Germans call the tree *Bucke boom;* and in France it is termed *Le Hêtre.*

Some writers have thought that the Beech was not an indigenous tree, because Cæsar says that he did not find it in Britain. Commentators have questioned whether the *Fagus* of the Romans was our Beech; but the conclusion seems to be general that it was so, and that the great Roman, never having penetrated probably to those parts of the country where it is abundant, was unacquainted with it as a tree of this island.

The Beech grows in the temperate countries of Europe, from the South of Norway to the Mediterranean Sea; and also in Asia Minor, Palestine, and other parts of

Asia. Either this species, or a variety, is common in the American forests; and Bryant, describing a winter day, refers to

> "The snow-bird twittering on the beechen bough;"

and adds,—

> "From his hollow tree
> The squirrel was abroad, gathering the nuts
> Just fallen, that asked the winter cold, and sway
> Of winter blast, to shake them from their hold."

Some of our best writers on forest trees consider the Beech as a tree which is not very picturesque; to us it seems beautiful. Its tall thick trunk, covered with smooth dark-grey rind, its innumerable boughs, often bending downwards, and clad in summer with glossy green foliage, which in autumn is most richly tinted with russet yellow, render it attractive. Often innumerable stems arise from one root; and no tree has its tint of trunk and bough more varied by mosses, lichens, and handsome species of fungus. The youngling beech keeps its shrivelled leaves through the winter; and the bole of the older tree often exhibits knobs about as large as a hazel-nut, which fall off at a blow, and are said to grow when planted in the soil.

The Beech is generally in full green by the end of May, when the flowers appear among the delicately-fringed leaves. The barren flowers form drooping heads, and soon fall off, and the brown, fertile, solitary flower is on a slender stalk, and is gradually developed into the nut or mast of the Beech. Children well know these nuts, which burst out when ripe from their triangular prickly envelopes, and which have a flavour very

similar to that of the almond. To a large number of animals these nuts afford a good store of food. The thrush, blackbird, and many another gladsome songster delight in them; as do the partridge and pheasant; and the little dormouse makes his autumn meal on the mast, and sinks to sleep till the next spring leaves are coming. As to the squirrel, he sits among the boughs, and takes his meal of them, scatters numbers in waste, or carries them with him to some neighbouring tree:—

"The sun is higher in the morning sky,
His beams embrace the mossy-trunked trees,
Yonder the squirrel, on the elm so high,
Frisketh about in the cool morning breeze;
Down peeps his diamond eye—amazed he sees
A stranger in his solitary home:
And now he hides beneath the oaken-trees,
And now he forth upon a branch will come,
To crack his beechen nuts, and watch me as I roam."

An old herbalist said, "The nuts do much nourish such beasts as feed thereon;" and the deer search for them beneath the trees, while country people, in the neighbourhoods of beech-woods, send the swine to feed on the mast. The nuts are very oily, and in France an oil, scarcely inferior to that of the olive, is expressed from them, and forms a very important article of domestic use, being fitted both for cookery and for burning in lamps. In some French provinces the mast (*La Faine* of the French) is roasted for coffee. Du Hamel says that the forests of Eu and of Crécy, in the department of the Oise, have yielded in a single season more than two million bushels of mast; and Michaux mentions that, in 1770, the forests of

Compiègne, near Verberie, furnished oil enough to supply the wants of the district for half a century. Beech-nuts are said to cause head-ache, if eaten in too great numbers.

We have, perhaps, no native tree which has so great a variety of uses as the Beech, though its wood is not well fitted for house or ship-building. It is very useful, however, for keels of vessels, flood-gates, piles, and other waterworks; and much household furniture is made of it, especially in continental countries,—it being often stained to represent mahogany or ebony. Sabots are often cut of this wood; and the chips of beech are much used in clarifying wine; while, in Scotland, the branches are valued for the pyroligneous acid which is procured from them. One interesting fact respecting this tree is, that to its German name, *Buch*, we owe our English word, "book,"—the sides of thick books having been made of beech boards. The wood is said to make the very best oars for galleys; and, in France, small boats are formed of the hollowed trunk of this tree. In Germany, where wood is so much used for fires, a large amount of beech is consumed as fuel. Beech hedges, formed of several trees placed near together, and kept cut, are also often to be seen on the Continent.

Classic readers will readily recal references made by ancient poets to the "beechen bowl;" and Milton, Cowley, and others of our English bards, allude to it. In the words of the latter:—

> "He sings the Bacchus, patron of the vine,
> The beechen bowl foams with a flood of wine."

And, in another place, he says :—

> "If thou, without a sigh or golden wish,
> Canst look upon the beechen bowl and dish;
> If in thy mind such power and greatness be,
> The Persian king's a slave compared with thee."

Beech-leaves make an excellent material for filling mattresses; and it is to be regretted that they are not more generally used in country places by the poor, and that there are not more ladies like Miss Tyler, the aunt of Southey, who, he says, "effected a wholesome and curious innovation" in the poor-house, by persuading the managers to use beds stuffed with beech-leaves. The practice of thus using them is very ancient, as the oft-quoted line of Juvenal testifies :—

> "The wood an house, the leaves a bed."

Evelyn says, that being gathered about the fall, and somewhat before they are frost-bitten, they "afford the best and easiest mattresses in the world to lay under our quilts, instead of straw; because, besides their tenderness and loose lying together, they continue sweet for seven or eight years, long before which time straw becomes musty and hard." He adds, "I have often lain upon them, to my great refreshment." Sir Thomas Dick Lauder, though used to the better beds of our times, still highly praises the beech-leaf mattresses, as forming a most luxurious couch, having a fragrant odour like that of green tea.

Our old herbalists believed beech-leaves to possess valuable medicinal properties. "They are," says an old writer, "cooling and binding, and therefore good to be

applied to hot swellings to discuss them." He recommends a salve made of these leaves; and says, that the water found in the hollowed places in the Beech-trunk is very efficacious in complaints of the skin. The catkins, which fall from the tree in spring, are sometimes collected for filling pillows and cushions, and also for packing fruit. The smooth bark is frequently inscribed by the rustic lover, now, with the name of his mistress, as it was in the days of Virgil:—

> "Or shall I rather the sad verse repeat,
> Which on the Beech's bark I lately writ?"

A writer in an American journal stated, a few years since, that the Beech was a non-conductor of lightning. It is a well-known fact that the Indians, in the prospect of a thunder-storm, take refuge beneath its boughs. Dr. Beeton, in a letter to Dr. Mitchell, stated that the Beech-tree is never known to be struck by atmospheric electricity, when other trees are shattered into splinters.

7. Castánea (Chestnut).

1. *C. vulgáris* (Spanish Chestnut, or Sweet Chestnut). —*Leaves* oblong-lanceolate, tapering to a point, serrated, with a small spine on each serrature, smooth on both sides. In many woods of the south and south-west of England, magnificent chestnut-trees are to be seen, apparently growing wild; and those who have spent their early days in their neighbourhood may, perhaps, recal with what glee they searched, in the month of October, for the fruits which fell from the boughs. The chestnut-tree often adorns, too, the parks and pleasure-

grounds of various parts of the kingdom; and though a naturalized and not a truly native plant, it was probably introduced here at a very early period by the Romans. They called the tree *Castánea*, from a town of Magnesia in Thessaly, where it grew in great abundance, and from which place they are believed to have obtained it. The fruit was also by early writers called the Sardian Nut, and afterwards Jupiter's Nut, and Husked Nut, which last name refers to the husk or rind enclosing it.

The Chestnut is a stately and beautiful tree, rivalling the Oak in size and length of years, though never quite so lofty or with such wide-spreading boughs as that monarch of the woods. Its tall trunk is like a column, and the bark is rifted and rent into innumerable clefts. The leaves are, during the month of June, of a most beautiful glossy green, of a lighter colour beneath, and edged with sharp spinous serratures. They are very handsome in their verdant mass; and very elegant, too, is each leaf,—often half a foot long, sometimes twice that length, and three or four inches broad, marked with strong veins, and of thin and flexible texture. Long after many trees have dropped their foliage, the Chestnut has its boughs well covered with a rich golden leafage, and is as beautiful as in the full rich green of spring. From May to July long and graceful spikes of greenish yellow flowers are to be seen hanging among the leaves, and looking almost like uncurled tendrils. The barren flowers at the upper part of this spike are somewhat drooping, and have spreading stamens. They soon wither and fall off. The fertile flowers are fewer,

and grow on stalks which finally lengthen as they support the fruit.

Some of the oldest chestnut-trees of this country stood probably in youthful vigour nearly a thousand years ago, and are yet undecayed; and many an avenue, planted centuries since, reminds us of the trees of Weston Underwood, which Cowper so prized:—

> "Not distant far a length of colonnade
> Invites us; monument of ancient taste
> Now scorn'd, but worthy of a better fate;
> Our fathers knew the value of a screen
> From sultry suns; and in these shaded walks,
> And long protracted bowers, enjoyed at noon
> The gloom and coolness of declining day.
> Thanks to Benevolus, he spares me yet
> These chestnuts ranged in corresponding lines,
> And though himself so polished, still reprieves
> The obsolete prolixity of shade."

The oldest chestnut, and, with the exception of some yews, perhaps the oldest tree in the kingdom, is the well-known tree which, as early as the time of King John, was known as the Great Chestnut of Tortworth. It is supposed to have been 300 years old in the days of that monarch, and it stands yet in picturesque grandeur, covered at its season with graceful leaves. Many a solitary wanderer has sat beneath its shadow musing on its past history and future length of days, as many a one sits yet, knowing that when he is laid in his last resting-place, the wind will stir its branches and the April shower patter on its leaves. It was formerly much compressed by the wall of the garden on which it stood; but the late Earl Ducie removed this, and placed fresh

soil about its base; and the old tree re-awakened to a more vigorous life. Bishop Mant thus refers to it:—

"Hence lately stood, or haply stands
E'en now, in Tortworth's lordly lands,
And stood in England's days of yore
What time the English bowmen bore
The keen assault of Norman knights,
The landmark of manorial rights,
Proud of his Saxon ancestry,
And stature great, the Chestnut-tree.
Nor, through broad England's woods, for age
With that can all her sons engage."

Trees nearly as old as this are scattered up and down the kingdom. Some very magnificent ones are in Kensington Gardens and Greenwich Park; those in the latter place were planted by Evelyn. He remarks, "The Chestnut is, next to the Oak, one of the most sought after by the carpenter and joiner. It hath formerly built a good part of our ancient houses in the City of London, as does yet appear. I had once a very large barn framed of this timber." It was generally believed, until recently, that the roof of Westminster Hall, as well as that of several cathedrals in France, was made of chestnut timber. Hence Bishop Mant says—

"Whence a rich store our fathers drew
The spacious barn to raise, or crown
In castled fort or towered town,
With open rafted roof the wall,
Of hallow'd church or scutcheon'd hall;
Hence London saw, of antique guise,
His framed and panell'd dwellings rise;
Stage above stage projecting more
And more, each fresh successive floor,—
Hence thou beheld'st thy palace rear
Its hall, Imperial Westminster."

It is not, however, now believed that the Chestnut was used so extensively in building as it was formerly thought; and it has been fully shown, that neither the timber of Westminster Hall, nor of John Evelyn's barn, was of chestnut,—they being found to be of Durmast oak (*Quércus sessiliflóra*). Chestnut timber does not prove valuable for buildings, having a liability to crack, and to be much injured by time. But for many purposes, as for hop-poles and vine-props, it is of great service; and one of its uses is indicated by the poet:—

> "With close-grained chestnut-wood of sovereign use,
> For casking up the grapes' most powerful juice."

It is also made into water-pipes; and its bark is valued by the tanner.

The leaves of the Chestnut have been used, like those of the Beech, for filling beds; but Evelyn remarks that they make a crackling noise when the sleeper moves. Both in this country and in France they are used as a litter for cattle. Chestnuts, roasted or boiled, may often be seen at our tables, as Milton describes:—

> "While hisses on my hearth the pulpy pear,
> And blackening chestnuts start and crackle there."

And the crackling sound is well known to country children, who gather around the Christmas hearth to roast these fruits. Some of those Chestnuts in common use are gathered from native trees; but the superior fruits of the trees in Spain are largely imported hither. Evelyn regretted that chestnuts were not more eaten in this country; as, on some parts of the Continent, the

trees are planted entirely for this produce, where they constitute a large proportion of the popular food. He says :—"We give that food to our swine in England which is amongst the delicacies of princes in other countries ; and being a large nut, is a lusty and masculine food for rusticks at all times, and of better nourishment for husbandmen than cold and rusty bacon, yea, and beans to boot ; instead of which they boil them, in Italy, with their bacon ; and, in Virgil's time, they ate them with milk or cheese. The bread made of the flour is exceedingly nutritive ; it is a robust food, and makes women well-complexioned, as I have read in a good author. They also make fritters with chestnut-flour, which they wet with rose-water, and sprinkle with grated parmigiano, and so fry them in fresh butter for a delicate. How we use chestnuts in stewed meats and beatille pies, our French cooks teach us ; and this is, in truth, their very best use, and commendable." The old French writers, though considering this fruit as well-suited to the robust and active, yet object to it, with good reason, for those whose lives are sedentary, as being difficult of digestion. They recommend its external application, in the form of cataplasms, for a variety of disorders. Our own old authors said that, if eaten overmuch, these nuts "made the blood thick, and caused head-ache." One of them remarks :—"If you dry chestnuts—only the kernels, I mean, both the barks being taken away—beat them into powder ; and make the powder up into an electuary with honey, so have you an admirable remedy for the cough and spitting of blood."

Martial said, many centuries ago,—

> "For chestnuts roasted by a gentle heat,
> No city can the learned Naples beat;"

and the chestnut is yet roasted daily there, as well as in many other parts of Italy. In the south of France, too, they form the common vegetable food of the peasantry, and are a substitute for the bread and potatoes of the British meal. The planting of trees, and the gathering and preparing chestnuts for use, form the livelihood of large numbers of people; and the fruits are preserved by drying either in sand or in a kiln. They are, when ground to powder, mixed with milk and salt, and made into cakes or a kind of porridge. In France they are usually prepared by boiling, and flavoured with seasoning herbs, or they are roasted. Sugar and starch have been procured from them; and they have been, after roasting, put into beer instead of malt.

While hanging on the tree, the nuts are covered with the enlarged outer calyxes, which are thickly beset with prickles.

Several places in this kingdom seem to have derived their names from the growth of these trees, as Norwood Chesteney, in the parish of Milton in Kent, and Chestnut Hill, near it. "In Hertfordshire," says Sir Thomas Dick Lauder, "is a town called, in old writings, Cheston, Cheshunte, Shesterhunte, Cestrehunte; and Philpot, who wrote in 1659, says—'There is a manor called Northwood Chestenus, which name complies with the situation; for it stands in a wood where chestnut-trees formerly grew in great abundance.'" The French call the tree *Chataignier;* the Germans, *Kastanienbaum;* the

Dutch, *Kastanjeboom;* the Italians, *Castagno;* and the Russians, *Keschtan.* The word rendered by our translators of the Scripture by chestnut, is believed to have signified the plane-tree, so abundant in Palestine and the other lands of Scripture.

8. Quércus (British Oak).

1. *Q. pedunculáta* (Common British or White Oak).—*Leaves* oblong, usually on short stalks, deeply cut at the edges with blunt lobes; *acorns* generally single, in twos or threes; *fruit stalks* long, and of reddish green, but in intermediate varieties short or almost wanting; *buds* small and not prominent; *branches* tortuous and spreading. A form of oak sometimes regarded as a variety, but now very generally considered as distinct, is termed either the Bay, Chestnut, Red, or Durmast Oak. Its acorns usually grow in clusters on very short stalks. The leaves are glossy and shining, broader, rounder, and less deeply cut than those of the Common Oak; their footstalks very long and of a yellowish-green colour; the buds large and prominent; the branches more upright. We have often thought, as we looked upon the Oak, that neither botanist nor poet has ever better described it than does Shakspeare, who calls it—

"The unwedgeable and gnarled oak."

As we gaze on its massive base and ponderous trunk, or its knotty wide-spread branches, covered with their umbrageous leafage, we instinctively recognise it as the



1 COMMON BRITISH OAK.
Quercus robur

2 HAZEL NUT
Corylus avellana

3 HORNBEAM

monarch of the vegetable kingdom. We feel, too, that it is a peculiarly British tree; and the thought is awakened of the "walls of Old England," and the "hearts of oak" that have beaten bravely within them. Many a fact of English history is associated with the tree. The mind reverts to the Druids, who took their name from the Celtic *derw* (oak), and who wore its wreaths of leaves around their brow; to the round oak-table of Prince Arthur; to the arrow of Walter Tyrrel, which struck against its stout trunk, on its way to the heart of the second William; to the king who took shelter beneath its boughs; or to the brave William Wallace, who slept nightly in the hollow of the oak of Torwood. Parliaments have held council beneath its shadow; and often has a sight of the tree served to recal the old idea of the Greeks, that it was an emblem of hospitality; or the fancy of the Arcadians, that it was the first created of trees. Its old name, too, the "Father of ships," is felt to be an appropriate one. Its timbers have borne on the ocean the brave and the free, have brought us the wealth of other climes, have carried liberty to the captive, and taken the blessings of Gospel light to those who sat in darkness. The child frolics beneath its shadow, or the weary man buries his dead under it, and knows it henceforth as the "Oak of weeping." The house which is his home, the church in which he worships his God, owe much to its compact, sturdy wood; and the boughs which shelter his cattle bear, too, the acorns which shall spring up to serve his successors. Bernard Barton expressed the feelings of many, when he wrote:—

"Its stem, though rough, is stout and strong;
Its giant branches throw
Their arms in shady blessings round,
O'er man and beast below.

Its leaf, though late in spring it shares
The zephyr's gentle sigh,
As late and long in autumn wears
A deeper, richer dye.

Type of an honest English heart,
It opens not at breath;
But having opened, plays its part,
Until it sinks in death.

Not early won, by gleam of sun,
Its beauties to unfold,
One of the last, in skies o'ercast,
To lose its faithful hold.

On earth the forest's honoured king,
Man's castle on the sea:
Who will, another tree may sing,—
Old England's oak for me."

To see fully the characteristic and picturesque beauty of the Oak, we should gaze on one which grows singly, and not on that surrounded by a group. It has in its solitary state more crooked branches, and altogether a more gnarled appearance. The branches of the Oak often spread out to an extent which forms a head broader than the height of the tree. The colour of its bark is pale grey; but one hardly sees its bark, amid that mass of grey and yellow lichens which encrust it, mingling with the emerald mosses which, especially at its base, form a smooth and verdant cushion, while brown and green mosses gather on every bough. Whether its twisted irregular boughs, always spreading horizontally,

are clad with the bright green of spring, or the golden hue of autumn, its tint is ever rich, and its majestic form is far more varied in outline than elm or ash, or tall poplar, or drooping birch, or silvery willow. Not even the most casual observer can confound the Oak with any other tree; nor is there any other British tree which casts so broad a shadow. The Oak may be said to be, generally, from sixty to eighty feet in height; but, in some rare instances, it attains to that of a hundred feet. It always grows slowly; and, after it has lived for a century, makes little increase of size for many years; but it becomes more picturesque in age than in youth; and even when the passing away of centuries has left it nothing but a leafless, branchless trunk, it looks as if it would yet outlive many generations of men. It is protected from the action of storms by the form of its trunk, which is larger just above the earth than at a few feet higher, as well as by the underground roots, which bear twisting branches beneath the soil, much like those on which the sunbeams gleam so gladly, and on which the bird sits to sing.

The Oak puts forth its foliage of tender green, sometimes tinged with crimson, in April and May; at which season the long loose pendulous green catkins are also to be seen. In winter the leaves have a reddish-brown tint, though the younger oaks wear, sometimes even in the dreariest season, a branch of golden foliage. Far away in the woodlands, too, we may see them contrasting with the other trees, by the large mass of withered leaves which the rough winds yet leave to them. The leaves of the Oak grow in tufts, and are unlike in form to those

of any other native tree. It often puts forth shoots in autumn; and instances are on record of a yet later growth of new leaves.

Although the Oak is decidedly an indigenous tree, and a flourishing one too, yet it is somewhat sparing of its fruit; nor is it at all certain, at any season, that a most thriving oak will bear acorns, or that, if they appear, they will be at all numerous. Little do we in this day realize the immense importance which these acorns bore in other years. Old writers called this fruit *accorne*, or, as Turner wrote it, *eykorne;* that is, says this herbalist, "ye corne, or fruit of an eike"—corn and kernel being common names for seeds. In the Anglo-Latin Dictionary, the "Promptorium," we find *ocorn*, and also *accorne*, or *archarde*, "fruite of the oke, glans." Mr. Albert Way, quoting from a MS. in the possession of Sir Thomas Phillips, says, "In the curious inventory of the effects of Sir Simon Burley, who was beheaded in 1388, are enumerated 'deux paires des pater-nostres de aumbre blanc, l'un contrefait des atchernes, l'autre rounde.'" Chaucer, also, tells of some who were "wonte lightlie to slaken hir hunger at even, with akehornes of okes."

Whether the ancient Britons ever fed upon acorns may be doubted; nor would it be easy to prove that their swine ate them; but when the Saxons swayed this kingdom, they, who had come from the vast oak forests of Germany, knew well the worth of this "fruite of the oke." Swine's flesh has been generally the principal animal food of nations in the earlier stages of civilization; and the Saxon swineherd was a very useful

member of the community. In times when swine were fattened in the forest by the acorns which strewed the ground, these forests became so important, that King Ina, in the close of the seventh century, enacted, for their preservation, the panage laws, which regulated the right of feeding swine in the woods. The fruit of the oak was then deemed a fitting gift for a king to receive, and the right of panage formed part of the dowry of the daughters of Saxon kings; while a failure of these fruits would have proved a grand cause of famine. The anger felt by the people when the Norman Conqueror turned the forest into the hunting-ground, was greatly caused by the loss of the food for swine afforded by the oak trees; and so bitter was the feeling engendered by the grievance, that the old historians seem to have great satisfaction in recording the retributive justice to the king, by which the New Forest proved fatal to more than one of his family. The destruction of the food for swine was one of the wrongs for which, in the later days of King John, the voice of the nation loudly demanded redress. Even till within the last few years, the New Forest furnished food for large numbers of swine; and the swineherd might beseen plying his ancient vocation beneath the Hampshire oaks,—those oaks of which the people of that county are said to be so proud. Long after wheat, oats, and rye were waving their green blades or ripened grain over the fields of Britain, and in some measure rendered the acorns of less importance, considerable value was still attached to these fruits by the nation. In the Saxon Chronicle, the year 1116 is described as a very "heavey-timed, vexatious, and de-

structive year;" and the failure of the acorns in that season is particularly mentioned. "This year also was so deficient in mast (acorns), that there never was heard such in all this land or in Wales." The acorns, to which the classic authors refer, as causing the fatness of the primitive people of Greece, were the edible fruits of other trees, as the *Q. Ballóta*, the *Q. Ilex*, and particularly the *Q. Æsculus*, the fruits of the latter being still as much eaten in Spain as chestnuts are in other countries.

From Britain's early days the timber of the Oak was used for various purposes; and Alfred's navy, which fought with the sea-kings, went forth in ships built, doubtless, of their native oak; while the conjecture is probable that the boats which composed the fleet of Edgar were framed of this wood. The timber found in our oldest buildings is of oak. The door of the inner chapel of Westminster Abbey, and the shrine of Edward the Confessor, are of oak; and one of those coronation-chairs, yet so interesting to visitors of the Abbey, and made of oak, has been there between five and six hundred years; while the round oak-table of Prince Arthur, in Winchester Castle, yet remains to tell of the durability of this wood. Professor Burnet remarks, that the great number of oak forests formerly in England is shown by the names of several places. "For one Ashford, Beech-hill, Elm-hurst, or Poplar, we find a host of oaks. Oakleys, Actons, Acklands, Akenhams, Acringtons, and so forth. The Saxon *ac*, *aec*, *aac*, and the later *ok*, *okes*, *oak*, have been most curiously and variously corrupted. Thus, we find *ac*, *aec*, degene-

rating into *ak*, *aike*, *acks*, when *ax*, *exe*, were often also aspirated into *hac*, *haec*, and *hacks*. In like manner, we have *oak*, *oke*, *ok*, *oc*, *ock*, *oeck*, *ocke*, *oks*, *ocks*, *ockes*, running into *oax*, *ox*, *oxes*, for *ox*, *oxs*, with their further corruptions, *auck*, *uck*, *huck*, *hoke*, and *wok*, as a corruption of the last extreme." The town Oakingham is at this day called and spelt, indifferently, Oakingham, Okingham, or Wokingham; and Oakesley, or Oxessey, are two common ways of writing the name of one identical place.

The two kinds of oak described at the head of this chapter have lately received much attention from our most eminent botanists, and there is reason to believe that much is yet to be learned respecting them. To the distinctive differences already given, we may add that the Common, or White Oak, assumes a rather set and unhealthy appearance; while the Durmast Oak is a healthy, robust-looking tree, and the medullary rays of its wood are thin, compared to the broad, large rays of the Common Oak. Some remarkable facts relating to the timber of both these oaks were lately subjected to the investigation of the Horticultural Society, three subjects being offered for consideration. These were, that these oaks may be distinguished by their timber as well as by other marks; that Durmast timber is, at least, as good as that of the Common Oak; and that the belief in its want of durability is altogether erroneous.

Professor Lindley, remarking on this subject, says, "The large size of the medullary rays is well known to afford the means of distinguishing the timber; so that a practised eye can hardly fail to recognise the one or

the other, in cases where fair specimens can be examined. It is the large size of these processes which makes it so easy to rend the Common Oak, while the Durmast refuses to submit to the operation. When genuine Durmast is contrasted with genuine Common Oak, the distinctions are obvious; but in the opinion of all woodmen of experience, there are varieties, or as some say, hybrids, of each, which partake of an intermediate character in the foliage and acorns, and which may therefore be supposed to offer an intermediate condition of the wood. Of this we have an example now before us, in a specimen from the county of Norfolk, which, because the acorns are on a very short stalk, has been supposed to be Durmast, although other circumstances show it to be merely a sessile-fruited variety of the Common Oak, the only species we ever saw in the eastern counties."

An experiment as to the value of Durmast was made some years since in Portsmouth Dockyard, on timber taken out of the "Vindictive," a ship into which some marked specimens had been purposely introduced. When tested as to strength, it was found that while Common Oak from the same ship broke, on an average, under a weight of 931lbs., only bending 4¼ inches, the Durmast sustained, on an average, the weight of 1,032lbs., and was bent 5⅝ inches before breaking. The experiment served to convince the dockyard authorities that they were wrong in rejecting the Durmast: and this oak is now in great request in the New Forest. All writers admit that this grows faster than the Common Oak; but the Professor observes that there is no reason

for believing that timber of slow growth is invariably preferable to that which has grown quickly.

For the purpose of showing that the prevailing belief of the want of durability in Durmast was a mistake, a number of specimens of the timber, still in good preservation, were exhibited to the Society. "The durability of the Common Oak," says Professor Lindley, "hardly requires proof: it was nevertheless illustrated by pieces of timber taken out of Windsor Castle when under repairs, and by portions of an ancient canoe, or coracle, which had been discovered about ten feet deep, at the bottom of the 'slopes' of Windsor Castle, by some workmen employed in digging a foundation for a bridge; with it were found deer's horns, hazel nuts, &c. The age of this relic, although unascertainable, must be very great, inasmuch as it was probably left where it was found at some period when the Thames, or a branch of it, reached the foot of the slopes; a time, no doubt, far more remote than when 'Cowy stakes' were driven into the bed of the Thames." Other specimens of old oak were also exhibited. Among the specimens of ancient Durmast compared with these, were the following interesting relics. Some timber from Glasgow Cathedral; part of a beam from West Boldon Church, in Durham, of A.D. 1300; pieces of the roof of Westminster Hall; part of the timber of the Hospitium of St. Mary's Abbey, York, of about A.D. 1400; a portion of a Saxon log-coffin; this and several other similar coffins having been found in excavating for new houses in Parliament Street, York; and from the same city was sent part of a huge boss from the centre of the roof of the choir of York Minster,

built at the close of the fourteenth century, and rescued from the fire in 1829. This half-burnt timber was in as sound a state as when introduced into the building, as was also that of a beam from Heslington Hall, which was built in the reign of Queen Elizabeth.

There is no doubt from these proofs that the Durmast timber is as durable as that of the Common Oak. Professor Lindley adds, "There, however, still remains the unanswered question, viz., How far the quality of the oak timber of either one species or the other is dependent upon soil or climate? It is certain that the Scotch foresters condemn the modern Durmast, as they find it with them; it is equally certain that the woodmen of Dean Forest and the New Forest hold an opposite opinion. It is possible that the Durmast, which is the common French species, requires a better climate than that of Scotland."

Many venerable oak-trees yet stand in strength and beauty in various parts of the land. The Leaden Oak, in Ampthill Park, was, even in the time of Cromwell, thought too old for naval timber, and had, in a survey made at that period, a piece of lead nailed to it to indicate this opinion. Our limits will scarcely allow of more than a reference to the large Oak of Wootton, in Buckinghamshire, that most magnificent of trees, whose great branches cover an area of 150 feet in diameter; to the Chenies Oak, older than the Norman Conquest; to the grand old Combermere Oaks, near Nantwich; or those venerable trees which have for centuries borne the blasts which rush over the bleak Dartmoor. The noble old Fairlop Oak, spreading over a space whose diameter

is 300 feet; Sir Philip Sidney's Oak at Penshurst; Pope's Oak in Windsor Forest; the grand Cowthorpe Oak, with its trunk sixty feet in circumference, and its boughs spreading over an area of half an acre; and many another tree, have all served as themes to painters, engravers, historians, poets, and lovers of Nature; and the Oak of Yardley Chase, which is said to be as old as the period of the Conqueror, suggested to Cowper such thoughts as might have been suggested by many an aged compeer :—

"Survivor sole, and hardly such, of all
That once lived here, thy brethren, at my birth,
(Since which I number threescore winters past,)
A shatter'd veteran, hollow-trunk'd perhaps,
As now, and with excoriate forks deform;
Relic of ages! could a mind, imbued
With truth from Heaven, created things adore,
I might with reverence kneel and worship thee.

Thou wast a bauble once, a cup and ball
Which babes might play with; and the thievish jay
Seeking his food, with ease might have purloin'd
The auburn nut that held thee, swallowing down
Thy yet close-folded latitude of boughs,
And all thine embryo vastness at a gulp.

Who lived when thou wast such? Oh, couldst thou speak,
As in Dodona once thy kindred trees
Oracular! I would not, curious, ask
The future, best unknown, but at thy mouth
Inquisitive the less ambiguous past."

Various kinds of gall are found on the Oak, and are caused by some species of *cynips*. These insects puncture the leaf, bud, or stem, in order to place their eggs within its substance; and introducing, at the same time,

a liquid which is noxious to the vegetable, and disturbs its circulation, originate spongy, shining, or woolly excrescences. Sometimes the bud is thus transformed into a hop-like object; sometimes the acorn becomes altered into a strange shape; little glossy round balls, or flat circular red patches, stud the leaves; clusters of strange-looking objects, resembling barnacles, appear on the back; or the brown spongy oak-apples, like balls of leather, stand upon the boughs. Those long-celebrated bitter apples of Sodom, which look beautiful in their violet tint, but turn to dust when crushed, are now found to be galls growing on the dwarf oaks of different countries. Josephus, as well as other ancient writers, refers to them; and most, from their very childhood, have learned to listen with wonder to the accounts of

> "Those Dead Sea fruits which please the eye,
> And turn to ashes on the lips."

During the last few years, the oaks in many parts of England have been infested to an alarming extent by a species of *cynips*, which appears to have been previously unnoticed. Instead of attacking the leaves or flower-stalks, as is the habit of most other species of gall-fly, it lays its eggs in the young twigs, and the consequence is, that when the leaves have fallen, the tree is found to be laden with globular galls, each about the size of a cherry, some single, but more frequently in clusters. When the grubs which they contain have reached maturity, they eat their way out, leaving the galls on the twigs; so that, all the winter, the oak simulates a fruit-tree; bearing a crop, however, most pernicious to itself,

as the extremities of all the twigs are found to have perished from exhaustion. Experiments have been tried to discover whether the galls can be applied with profit to manufacturing purposes. As yet no satisfactory result has been attained, trial having been made only with galls from which the grubs had escaped.

M. Duplat, a chemist attached to a military hospital, has lately succeeded in procuring oil, and producing alcohol by distillation from acorns growing in the oak-forests which cover Mount Atlas. Both the oil and alcohol have been found to be perfectly suited for chemical purposes.

9. Córylus (Hazel).

1. *C. Avellána* (Common Hazel).—*Leaves* roundish-heart-shaped, pointed, downy beneath; *stipules* oblong, blunt; *involucre of the fruit* bell-shaped, torn at the margin. What English reader, country born and country reared, is not familiar with the Hazel-tree,—the tree whose pale, greenish-yellow catkins (Lambs'-tails, as we called them) hung among the nosegays of blue-bells and primroses, gathered in the spring of life and the spring-time of the year? Earlier still in the season, and while the frosts of January were sparkling on the hedges, we have found the little crimson clusters of brilliant stigmas in the scaly buds of the pistil-bearing flowers rewarding our search, and unrivalled in bright-ness by any surrounding object, save where, on some fallen bough, the fungus-cups were clustering, rich in

their lining of scarlet or crimson. In spring-time how many have found, like Clare,

"Dead leaves of oak and hazel-tree,
The constant covering of all woody land;
With tiny violets creeping plenteously,
That one by one enticed the patient hand."

But it is not alone in spring that the Hazel-tree had its store of pleasures. The pale-green catkins shed their pollen and fall, but the red stigmas ripen into fruits; and clustering-nuts, embrowned by autumn's touch, have welcomed thousands, who, like Wordsworth, have gone forth with bounding spirits to seek them:—

"Among the woods
And in the pathless rocks I forced my way,
Until at length I came to one dear nook
Unvisited, where not a broken bough
Droop'd with its withered leaves,—ungracious sign
Of devastation! but the hazels rose
Tall and erect, with milk-white clusters hung,—
A virgin scene! a little while I stood,
Breathing with such suppression of the heart
As joy delights in; and with wise restraint
Voluptuous, fearful of a rival, eyed
The banquet. Then up I arose
And dragg'd to earth each branch and bough with crash
And merciless ravage; and the shady nook
Of hazels, and the green and mossy bower
Deform'd and sullied, patiently gave up
Their quiet being: but unless I now
Confound my present feelings with the past,
Even then, when from the bower I turn'd away,
Exulting rich beyond the wealth of kings,
I felt a sense of pain when I beheld
The silent trees and the intruding sky."

Well do the frisking squirrel and the creeping cheerful nut-hatch prize the fruits of the Hazel; fruits which well deserve a place at the dessert, though the cultivated filberts or the nuts of Spain are oftener seen there. Our hazel-nut was called by the Anglo-Saxons *Hasel-nutu*, from *hasel*, a cup, and *knutu*, a nut. In later days nuts were spelt, as Chaucer wrote them, "notes," and a prescription, written before our earliest bard had traced a line, gives the same orthography. For a cold in the head, the patient was directed :—"Take small note kennelys, and roost hem, and ete hem with a lytyl powder of pepyr when thou gost to bed." Culpepper, who refers to the use of nuts as a remedy for colds, quaintly says, "Why should the vulgar so familiarly affirm that eating nuts causes shortness of breath, than which nothing is falser? For how can that which strengthens the lungs cause shortness of breath? I confess the opinion is far older than I am. I knew tradition was a friend to error before, but I never knew that he was a father of slander; or, are men's tongues so given to slandering one another, that they must slander nuts too, to keep their tongues in use?" He adds, "And thus I have made an apology for nuts, which cannot speak for themselves." Besides being used medicinally, chocolate, and even bread, have been made of nuts; and they were prized in former times for the oil which they yielded,—the hazel being cultivated for this produce.

Mr. T. Hudson Turner quotes a MS., written apparently by Sir Walter de Henlée, "chevalier," in the early part of the fourteenth century, which states that

one quarter of nuts ought to yield four gallons of oil; but the particular sort of nut is not specified. But though the Hazel may have been early cultivated here, the tree is undoubtedly indigenous, and the nuts are often found in the bogs of this kingdom. Mr. Hugh Miller describes some of the bogs about Cromarty, thick set with silvery willows, while they are full of the remains of enormous oaks and elms, now black as the coal itself. Here, this writer tells us, he found handfuls of hazel-nuts of the ordinary size, but black as jet, with the cups of acorns and twigs of birch, the latter still retaining almost unchanged its silvery crust, while its woody interior had become a mere pulp. "I have even," he says, "laid open in layers of a sort of unctuous clay, resembling fuller's earth, leaves of oak, birch, and hazel, which had fluttered in the winds thousands of years before."

We have begun our account of the Hazel with that of its nut, for this has peculiar claims on our notice, because it is one of the few British fruits which are really worth eating; sloes, blackberries, service-berries, wild cherries, and crab-apples, being pleasing only to childhood's taste, though wild raspberries and strawberries are sweeter even than cultivated ones. But besides yielding its store of nuts, the Hazel has many other uses, and its undergrowth of wood is so serviceable, that it might have suggested the old saying, "An acre of coppice wood is as good as an acre of wheat land, if not better." Though the wood of the tree is never large enough to afford timber for building, yet it is used in cabinet-making, and for a variety of small

and delicate articles of manufacture, while its exceedingly tough and flexible shoots serve for hoops, crates, hurdles, walking-sticks, fishing-rods, rustic baskets, and fences. In the vale of Derwent, hazels are grown especially for the uses of the root-shoots; and the roots of the tree, when large, afford curiously-veined pieces, used in veneering, and for small articles of domestic use; and many a country oven is heated with the fagot of hazel-wood.

That interesting and venerable church, one of the first reared in this land,—the church belonging to the Abbey of Glastonbury,—is believed to have had the walls of its earliest building made of hazel-boughs, interwoven among stakes; and walls of this kind, plastered over with mortar, are yet in use for outhouses in country places. Some religious associations appear, too, to have been connected with the hazel-wood; and it is believed by antiquaries to have formed, like the scallop-shell, a token of certain pilgrimages. In several places staves of the hazel have been found in the graves of ecclesiastics. A writer in the "Archæological Journal" states that a few years since, when the tomb of Richard, Bishop of Chichester, was restored, and the effigy and stone table removed, the grave of stone courses beneath was found in perfect repair, but the earth which covered the remains had sunk to the depth of several inches. On the surface lay several fragments of hazel wands, probably such as pilgrims had cut down by the way, and which they suspended at the shrine as devout offerings. This bishop died between the years 1245 and 1253. Similar hazel branches have been found in

Hereford Cathedral; and such a hazel-wand, roughly trimmed, as if cut by the wayside, lay in the tomb of Richard Mayo, Bishop of Hereford, with several sea-shells,—tokens, it is supposed, of a pilgrimage to the shrine of St. James. This was probably made when that prelate was sent to escort Catherine of Arragon, the affianced bride of Prince Arthur, on her arrival in England. The use of the forked hazel-twig, as a divining rod, to indicate the place where metal lies beneath the surface of the earth, is yet frequent in mining districts. It is said to have been thus employed in this kingdom as early as the days of Agricola, and is probably the remains of a custom used in still older periods, when the prophet Hosea declared of the ancient Israelites, "My people ask counsel at their stocks, and their staff declareth unto them." As Evelyn said, "It is certainly next to a miracle, and requires a strong faith;" but even in these days, mines are still sunk in Cornwall, under the belief that the presence of metal is indicated by the bending of the hazel-twig.

The tint of the foliage of the hazel-tree is a somewhat sober green; and it never wears the light hue of the Oak or Beech, though the young leaves at the top of the twigs, and sometimes also the larger leaves, are often purplish-red. The leaves are stalked, rough, strongly veined, and have, when young, oblong stipules at their base; the bark on the trunk is ash-coloured, and on the branches light-brown, spotted with white. The Hazel, when allowed to reach the dimensions of a tree, attains a height of about twenty feet. Leyden, in his verses on spring, says:—

"I see the hazel's rough notch'd leaves,
Each morning wide and wider spread,
While every sigh that zephyr heaves
Sprinkles the dew-drops round my head.

The yellow moss in scaly rings
Creeps round the hawthorn's prickly bough;
The speckled linnet pecks and sings,
While snowy blossoms round me blow.

The gales sing softly through the trees,
When boughs in green waves heave and swell;
The azure violet scents the breeze,
Which shakes the yellow crowfoot's bell."

And the Hazel is a continual subject of allusion among the Troubadours and old French poets.

This tree retains its leaves till the first severe frosts; and they are, in autumn, of a russet brown, which finally changes to a rich yellow tint. The branches being picturesque, the tree is used in France for arbours and walks. It is said by the growers to thrive best in hazel-mould, that is, a mould of a reddish-brown hue; but it will flourish on any soil that is not too moist. Many old English names of places and persons are derived from this plant, as Hazlemere and Hazelbury. It grows sometimes in the North at a great elevation, and it is a tree of all the temperate climates of Europe and Asia. The French call it *Coudrier noisetier;* the Germans, *Haselstrauch Nussbaum;* and the Italians, *Avellano* and *Nocciola.*

The two varieties of the Hazel which are most commonly cultivated for the nuts are the Cob and Filbert-trees. The latter differ from the ordinary form of the tree in the larger nuts with their handsomer green

coverings. They are grown plentifully in Kent,—especially in the neighbourhood of Maidstone.

10. Cárpinus (Hornbeam).

1. *C. Bétulus* (Common Hornbeam).—*Leaves* egg-shaped, acute, sharply and doubly serrated, plaited when young; *scales of the fruit* 3-parted. The Hornbeam is a common tree of poor damp soils in several parts of England, forming a chief portion of some of the old forests about London, as of that of Epping. Gerarde, who speaks of it as growing in his time very plentifully in Northamptonshire, and about Gravesend in Kent, thus describes it:—"It grows great and very like unto the elme or witch hasell-tree, having a great body, the wood or timber whereof is better for arrows and shafts, pulleys for mills, and such like devices, than elm or witch hasell; for in time it waxeth so hard that the toughness and hardness of it may be rather compared unto horn than unto wood; and, therefore, it was called horne-beam or hard-beame. The leaves of it are like the elme, saving that they be tenderer; among these hang certaine triangled things, upon which are found knaps or little buds of the thickness of ciches (vetches), in which is contained the fruit or seede: the roote is strong and thicke."

Like most of the descriptions given by our old herbalists, this is sufficiently graphic; and the tree is doubtless often mistaken for the elm, from the similarity of its leaves, which, however, are smoother, and have transverse hairy ribs, and which are, in the early stage, very

prettily folded into plaits. The Hornbeam may be occasionally seen fifty feet high; but it is usually a small, and not a very ornamental tree. The trunk is slender, somewhat flattened, straight, and but little roughened, and the flowers appear among the foliage in May. The barren catkins are of a pale yellowish-green, lax and scaly, two or three inches long; and those which are fertile are much smaller, and are succeeded in due season by small angular nuts, each seated within a leafy cup. No other British catkins are like these; so that this tree is, during its flowering season, readily distinguished by them.

The Hornbeam was formerly sometimes called Horse-Beech; and it was once much in use for alcoves, labyrinths, and hedges, as it bears cutting exceedingly well. Indeed, the great excellency of the tree appears to be in its adaptation for hedges. Evelyn praises it with scarcely less enthusiasm than that with which he refers to his favourite holly-hedge; and says of the Hornbeam that it makes the "noblest and stateliest hedges for long walks in gardens and parks of any hedge whatsoever." The plant is much used in France for this purpose, and the hedges, called *Charmilles*, are greatly valued. On some spots of our own land, we might yet say with the poet:—

> "Here hornbeam hedges regularly grow;
> Here hawthorn whitens and wild roses blow."

But the two latter plants are far more commonly to be seen in our hedgerows than the former.

The Hornbeam retains its leaves in winter. Its wood is white, tough, and close-grained, but will not take a good polish. It is adapted, however, especially when

young, for many country uses, and is of service to the carpenter and wheelwright, and the very best of wood for fuel. A twig will burn like a candle, and continue burning for a long time; and in France the wood is much liked for the steady bright light which it diffuses in the apartment. Its charcoal is excellent; and the French use the dried foliage for fodder. The tree is called in French, *Le Charme;* the Germans call it *Die Hagebuche.* Its catkins are said to be sometimes fraudulently mingled with hops.

Order LXXXI. CONIFERÆ.—FIR TRIBE.

Stamens and *pistils* on separate flowers, and, in some cases, on different trees; *stamens* arranged in sets around a common stalk; *fertile flowers* usually in cones, sometimes solitary, destitute of styles or stigmas; *fruit* either a seed seated in a fleshy covering, or a cone composed of hardened scales or bracts, bearing at the base of each naked seeds, which are often winged; *leaves* rigid.

1. Pinus (Fir).—*Barren flowers* in clustered scaly catkins, the upper scales bearing sessile anthers; *fertile flowers* in an egg-shaped catkin, which finally becomes a woody cone; *seeds* winged. Name, the Latin name of the tree.

2. Juniperus (Juniper).—*Barren flowers* in small scaly catkins, anthers attached to the base of the scales;



1 SCOTCH FIR
Pinus sylvestris

2 JUNIPER
Juniperus communis

3 YEW
Taxus baccata

fertile flowers in small catkins of a few united scales, which finally become a berry, with three hard seeds. Name, the Latin name of the tree.

3. Táxus (Yew).—*Barren flowers* in oval catkins, scaly at the base; *stamens* numerous; *fertile flowers* solitary, with a few scales at the base; *seed* solitary, hard, contained in a fleshy cup. Name, from *toxon*, a bow, from the old use of its wood.

1. Pínus (Fir).

.1 *P. sylvéstris* (Scotch Fir).—*Leaves* long, slender, and rigid, in pairs round the branch; *young cones* stalked, generally two together; *wing* thrice as long as the seed. Of the tall dark firs and pines which thicken in the vast forests of Northern Europe, one alone grows wild in Britain. This, the Scotch Fir, is, however, one of the most important and widely distributed of the European species, and one which furnishes several varieties of stately trees. In Wiltshire and some other parts of England, this Fir is to be found covering large tracts of land; and those who wander there might bethink them of the words of Coleridge:—

> "A rock, methought, fast by a grove of firs,
> Whose thready leaves to the low-breathing gale
> Made a soft sound, most like the distant ocean."

These firs were sown there by means of these murmuring gales, which waft the winged seeds around the spot; or were planted by the rook or other bird, which eats his meal from the fir-cone, and scatters with his beak some of the numerous seeds.

But it is not in England that we find the extensive pine forests, which form so characteristic a feature of Highland scenery, darkening the slopes and summits of mountains, swaying their boughs hither and thither, and uttering such sounds

> "As the rough winds of autumn make, when they
> Pass o'er the forest and bend down the pines."

Amid their shadow clumps of purple heather arise in beauty; and many a lovely flower and brilliant fungus, if not absolutely peculiar to the pine wood, yet especially loves its shelter; while a delicious and resinous fragrance reaches the sense, long ere the eye can discern their forms in the blue distance. And how well are the trees adapted to these their haunts! Their roots, running immediately under the surface, require but little depth of soil; their evergreen, rigid leaves, are not easily torn by the bleak winds which sweep over the hill-tops, and are so slender that they will not long hold the mass of snow; while, by their resinous juices, they are protected from the rigour of the cold air. Nor do the fir-forests present that uniformity of aspect which, it might be supposed, would be consequent on the little variety of the trees. Every visitor to the Highlands of Scotland is charmed by their beauty and magnificence. "Every movement we make," says Sir T. D. Lauder, "exposes to our view fresh objects of excitement, and discloses new scenes produced by the infinite variety of the surface. At one time we find ourselves wandering along some natural level, under the deep and sublime shade of the heaving pine foliage, upheld high over head by the tall and massive columnar stems, which appear to form

an endless colonnade; the ground dry as a floor beneath our footsteps, the very sound of which is muffled by the thick deposition of decayed spines, with which the seasons of more than one century have strewed it; hardly conscious that the sun is up, save from the fragrant resinous odour which its influence is exhaling, and the continued hum of the clouds of insects that are dancing in its beams, over the tops of the trees."

This writer describes with graphic power the changes of scenery which ensue, when the ground swells into hillocks, and the vast continuity of shade is broken by the light which streams down on some single huge tree, and on the purple heath-bells and tufts of ferns; and how the silence is interrupted by the proud movements of the troops of red deer, or by the roar of the cataract, whose white sheet of water dashes down the rock into some deep ravine, shaking the very tallest of the pine trees, and bidding them quiver, as by the touch of a giant hand.

Extensive tracts of Highland pine-forests have been thinned by the hand of man; and in some places, where once the trees grew in masses, they are but few and scattered. Sometimes the firs have been burned down in order to extirpate the wolves; sometimes because, in the time of war, they afforded a hiding-place to the enemy; and many a lofty tree has been felled

"To be the mast of some great ammiral."

Hugh Miller, referring to the forest of Corrybhalgan, says:—"It was but a shred of its former self; but the venerable trees still rose thick and tall in some of the

more inaccessible hollows; and it was interesting to mark, when they encroached on the open waste, how thoroughly they lost the ordinary character of the Scotch Fir, and how, sending out their short gnarled boles and immense branches two or three feet over the soil, they somewhat resembled, in their squat, dense proportions and rounded contours, gigantic bee-hives." In other spots, masses of mossy land were covered with short stumps of trees, mingled with noble pines, which have risen or are rising up from the

> "Fir-trees all around,
> Aye dropping their hard fruit upon the ground."

The Scotch Fir is probably a native of England as well as of Scotland. Gerarde tells how the tree once grew in great plenty in Cheshire, Staffordshire, and Lancashire, "as is reported, before Noah's flood; but being overflowed and overwhelmed, they have been found since in the mossie and waterie moorish ground, very sound and fresh until this day, and so full of a resinous substance that they burne like a torch or linke, and the inhabitants of those countries doe call it Firre-woodde, and Fire-woodde unto this day." The bogs of Ireland prove, too, that the Fir was once abundant in that country.

A well-grown Scotch Fir is a beautiful tree, with its reddish-brown trunk looking sometimes as if cut out of copper, and its spiry pyramidal head of foliage. It has a common variety in which the branches spread out horizontally, or bend downwards, while the bark is of a more yellowish hue, and the foliage of a sea-green tint. The leaves of the Scotch Fir are in pairs all round the

branches, and in young trees are sheathed at the base, and two or three inches long, being shorter in older trees. They are slightly convex beneath, their edges minutely notched, and at first they are glaucous on the lower side, but as they become older of a deeper green. The tree bears its flowers in April and May. The barren flowers are placed in whorls around the extremities of last year's shoots, and are laden with an abundance of pollen. The fertile catkins grow chiefly in pairs, towards the ends of the new shoots, and gradually harden into brown rugged cones, which taper at the point. In the autumn of the second year these burst open and discharge their seeds, which are small and furnished with a membranous wing. This fir is often sixty feet in height.

The Scotch Fir is a most valuable tree, when it grows wild and on a congenial soil, furnishing either red or yellow deal. The trunk of pine-trees is straighter than that of most others; hence, both in naval and civil architecture, its durable wood is used for many important purposes, and that of the Scotch Fir is prized beyond all others of the genus. The resinous juice, which either exudes naturally or may be procured by incision, is used in preparing tar, pitch, rosin, and turpentine; and, in the North of Europe, the outer bark of the tree is employed for covering and lining huts, while the inner bark, ground to powder, and in some cases mingled with flour, is made into a coarse black bread. Mr. Laing describes cakes made of these materials, and cooked in a frying-pan or on a griddle, as very good food. The leaves and branches of the tree serve as fodder for cattle

and sheep during severe weather; pine-chips are substituted for hops in brewing; and the young shoots of the tree are eaten with avidity by peasant children. The log-houses of Northern Europe are made almost entirely of Scotch fir; and in Russia roads are formed of its trunks, while the pine torch is in common use in many parts of Europe. M. Lamartine, describing an excursion over the mountains in search of eagles, tells us how these torches are made. He says that having cut down some young firs, they split the trunks lengthwise into little laths of wood, leaving the lower part uncut, so that it might form a handle by which to carry the torch. The bundle of laths was held together by bands of wire, which were placed at equal distances. They then dried them in an oven, after the bread had been removed. "Those little trees," says this writer, "thus prepared, calcined by the heat of the oven, and full of the natural resin of the pine, constitute excellent torches, which burn slowly, which nothing can extinguish, and which, when lighted, give out a flame of dazzling brightness, on being exposed to the slightest breeze."

A few years since, M. Panewitz succeeded in preparing, by chemical decomposition, from the leaves of the Scotch fir, a hemp-like fibre called in Germany *Wald-wolle*, a word best rendered into English by Pine-wool. This substance is now extensively employed for filling pillows, cushions, and mattresses, or for the purpose of wadding. In the prairie of Humboldt, near Breslau in Silesia, are two remarkable establishments, one for the purpose of making the pine-leaves into this cotton or wool, the other for affording baths to invalids, made of the water

resulting from the fabrication of this material, both being superintended by the inventor of the process. The leaves of firs are usually composed of bundles of strong fibres, held together by a resinous substance, and those of the Scotch Fir are generally preferred, as being the longest; nor is the tree injured by stripping off the foliage, as, if those leaves are left which grow at the extremities of the branches, the others are readily renewed, and the leaf-gathering gives employment to many among the poor. In 1842, the directors of the hospital of Vienna used this wool instead of cotton wadding, or for wool in quilted coverings. The aromatic odour which these diffused was found both agreeable and healthful, while it proved obnoxious to insects. Since this period the pine wool, or wood wool, has been used in various public institutions in Germany, as well as in cushions for railway carriages; and blankets, pasteboard, and various other articles, are made of the fibre; while rheumatism, nervous affections, and several other maladies have been stated, on good authority, to be greatly benefited by the resinous water procured from it. A prize medal was awarded at our Great Exhibition for materials made from the Pine needle wool, prepared from the needles or leaves of the Pine-tree. The bark of the Scotch Fir has been also used in tanning.

Some legends doubtless were once in existence respecting the Fir, as one of the titles given in honour of the Virgin, in an old edition of Chaucer's "Ballad in Commendation of Our Lady," is "Benigne Braunchlet of the Pine-tree."

2. Juníperus (Juniper).

1. *J. communis* (Common Juniper).—*Leaves* 3 in a whorl, linear and spine-tipped; *flowers* small, in the axils of the leaves. On many a widely stretching moorland we may descry the clumps of Juniper, with their greyish-green branches varying the tints of the landscape. The summer wind passes lightly over the shrub, bringing with it some faint tokens of its aroma, an aroma far more powerful if the plant is bruised; and the winter blasts rush over it, and the winter frosts congeal upon its branches, but it loses nothing of its freshness of tint. Mr. Matthew Arnold describes such a spot as that on which it sometimes grows :—

> "This cirque of open ground,
> So light and green: the heather, which all round
> Creeps thickly, grows not here, but the pale grass
> Is strewn with rocks, and many a shiver'd mass
> Of vein'd white gleaming quartz, and here and there
> Dotted with holly and with juniper."

This low shrub grows either on fertile or barren soils, on rocky mountains or on bogs, on hills or in valleys; but chiefly in open and bleak places, though sometimes in woods. It is common, not in this kingdom only, but in all the northern parts of Europe. In England it occurs chiefly on open chalky or sandy places, on hill-sides and sea-cliffs; but with us it is of low growth, seldom attaining a greater height than that of five feet, although it occasionally forms a massy trunk, and becomes a small tree, while a dwarf variety trails over the ground. In days when shrubs and trees were cut

into various figures, the Juniper was much employed for this purpose. The plant seems to injure the herbage, for the grass about the Juniper is often thin and poor.

This shrub sends out a number of tough branches, covered with a smooth brown or reddish bark, slightly tinged with purple, while the bark of the trunk is greyish-brown, cracked and scaly. The stiff evergreen leaves grow in threes round the branches, and are dark bright green beneath, and grey on the upper surface. Their acute points deserve Spenser's description:—

"Swete is the juniper, but sharpe his bough."

The small green barren flowers appear in May, in little catkins, among the axils of the leaves, and are on different plants, from the few-flowered fertile cones. The berries, which are about as large as currants, appear one summer, and, continuing green until the following season, then ripen into a dark purple hue, covered, like the sloe, with a bluish-white powder or bloom. They are not juicy, but spongy, and have an aromatic flavour, and contain three oblong seeds. These fruits are useful, not alone to the wild bird of moor or fell, but also to man. When crushed, they yield an essential oil, and a very pleasant and wholesome beer, called *genévrette*, is made by cottagers in some parts of France with barley and juniper-berries. Hollands and English gin were formerly flavoured with them, and they once formed an important article of commerce among the Dutch; but Professor Burnet remarks of the last-named liquor, that it is "wholly unconscious of their presence," the British manufac-

turers having substituted oil of turpentine. The berries yield, on boiling, a large amount of sugar; and Linnæus mentions that a decoction of these fruits, when fermented, forms a common beverage among the Swedes, who still eat juniper-berries at their meals, in the form of a conserve. Our fathers not only employed them as a spice to their dishes, but praised their medicinal powers. "This admirable solar shrub," says one of our old writers, "is scarce to be paralleled for its virtues. The berries are hot in the third degree, and dry but in the first, being a most admirable counter poison, and as great a resister of the pestilence as any growing: they are excellent good against the bitings of venomous beasts." Gerarde also adds his testimony to their worth, and says, "Divers in Bohemia do take, instead of other drink, the water wherein these berries have been steeped, who live in wonderful good health." The berries were much recommended by physicians to be eaten; and ten or a dozen every morning, fasting, was an old prescription for diseases of the lungs. They doubtless possess stimulating properties. In many continental countries both the fruits and the wood of the Juniper are burned in hospitals to render the air wholesome; and the ancients were wont to throw the berries on the funeral pile. They are still used in German villages instead of spices, and for the purpose of flavouring the sauer kraut; and so abundant is the shrub on many moorlands of Germany, that the flesh of the heath-cock is said to be sometimes strongly flavoured with juniper, and to be quite distasteful.

The wood of the Juniper is aromatic, and so pleasant

is the odour of the young twigs, that the housewife in Norway strews them over her floor, as our country people would strew sand. In Evelyn's time spits for meat, and spoons, were made of this wood, and were thought to impart a wholesome property, as well as an agreeable flavour to meat. The old notion of the ancients that the burning of Juniper wood expelled evil spirits from the dwelling, probably led to some superstitious practices with the plant in later days, as we infer from occasional mention of the poets. Thus, in Bishop Hall's Satires, we find an allusion of this nature:

> "And with glasse stills, and sticks of juniper,
> Raise the black spright that burns not with the fire:"

while various ceremonies connected with the burning of this wood in some parts of Scotland, during the prevalence of an epidemic, have led to the inference that this old practice was a remnant of a Druidical superstition. The wood is capable of bearing a high polish, and is used by turners in making various small articles.

3. Taxus (Yew).

1. *T. baccáta* (Common Yew).—*Leaves* crowded, linear, evergreen; *flowers* sessile, axillary. One never thinks of a Yew-tree with its dark-green foliage, without thinking, too, of its best accompaniment, some village church, by whose portal perhaps it has stood for centuries, seeming yet to be the "challenger of time." As in many cases it was green ere those grey walls or crumbling buttresses were reared, so too it will long survive the edifice which it now adorns, and utter to coming

generations the silent lessons which it preaches to ours. So old is its aspect that we can hardly imagine that it was ever young; and, venerable and evergreen, we feel how well-fitted it is for a symbol of immortality; and, sombre as it is, how well Dryden's epithet of the "mourner yew" befits the old tree.

The fact that the Christian church was often reared, like that of St. Paul in London, on the site of an ancient heathen temple, must account for the great age of some of our old churchyard yews. Many of them are undoubtedly older than the Conquest; and that celebrated old Yew of Braburne in Kent, now so long dead that no living inhabitant of the village saw its fall or knows its history—that ancient tree is believed to have been three thousand years old, and to have lived in those days when the shepherds listened to the glorious anthem sung by angels, "Glory to God in the highest, and on earth peace; good will towards man." It must, however, be confessed that the means by which some botanists have believed it possible to ascertain the age of the Yew, are not universally admitted among scientific men. Evelyn described this tree, in his time, as fifty-eight feet eleven inches in circumference, having, as he says, measured it himself. Mr. Bowman, who wrote, some years since, in the "Magazine of Natural History," an interesting paper on "the Longevity of the Yew and its Connexion with Churchyards," thinks it probable that our pagan ancestors, on their first arrival here, considered the Yew as the best substitute for the Cypress, in decking the graves; and this writer refers to some lines of a very ancient Welsh bard, which are thus

translated by Dr. Owen Pugh: "The Minster of Esgor and that of Hênllan, of celebrity for sheltering yews." *Hênllan* signifies "an old grove," thus proving that its church stood where Druidical worship had been performed.

When Augustine was sent by Gregory the Great to preach Christianity in Britain, he was enjoined to purify, and not to destroy, the temples of pagan worship; and it is not unlikely that the very presence of the venerable yew-trees would prove an attraction to these sites. The old pagans, like the modern heathen, loved to place trees around the place of worship. We may trace the custom even in those times when Israel, falling into the idolatries of the surrounding nations, had altars in groves and on high places, and forsook the God of their fathers, to worship the idol beneath the green tree.

But many yews on which we yet look, as we go up to the house of prayer, have been planted since the Christian faith shed its glorious influence over the hearts and homes of this land. When the doctrine of the immortality of the body, as well as that of the soul, came to be fully and generally recognised, the Yew, one of the greenest and longest lived of trees, would yet seem an appropriate plant to place by the grave. The association of this tree with a spot at once dear and solemn would be long ere it lost its hold on the heart of the Christian, and the thoughtful man yet likes to sit beneath its boughs, and think of the times long since passed away, and the men whose remains it overshadows. Then the convenience of such a tree, as supplying shelter to those who have come over field and hill to the sound

of the bell, and are awaiting the service, would afford another reason for planting the Yew near the church porch; and the practice of placing evergreens on the coffin and in the grave would fit it for a further use. No record seems in existence which tells that the Yew was placed there that it might furnish the men of the time with wood for the bow; though we know that the wood of the consecrated yew of the churchyard was worth more than the wood of an ordinary tree. Thus the ancient law of Wales records: "A consecrated yew, its value is a pound: a yew-tree not consecrated, fifteen pence."

In the olden times of England the wood of the Yew was of no inconsiderable importance; indeed, it was second only to that of the Oak itself, as an old proverb might remind us, which says—

> "England were but a fling,
> But for the bow and the grey goose wing."

And the yew wood was far preferred to that of any other tree for the weapon of the archer. From England's earliest days the bow figures in her history, and the imagination reverts to the story of King Alfred sitting on the peasant's hearth, mending his bow and arrows, and to many a tale of Robin Hood and his merrie men, in which legend and history are intermingled. Chaucer calls the tree the "Shooter Yew," and describes his archer as carrying a "mightie bowe;" and many years later, Spenser refers to the material of which such bows were made—

> "Long he them bore above the subject plaine,
> As far as eughen bowe a shaft may send."

In those cruel battles when our kings laid claim to the succession of the throne of France, the archers were the chief reliance of England, and many a noble yew yielded its wood to the warrior, as Wordsworth has said—

> "Not loth to furnish weapons for the bands
> Of Umfraville or Percy, ere they march'd
> To Scotland's heaths; or those that cross'd the sea,
> And drew their sounding bows at Azincour,
> Perhaps at earlier Crecy or Poictiers."

So general was the use of the bow that Grafton relates how, in the reign of Henry IV., after an affray at Cirencester, fourscore archers of the town were thanked for their services, among which were "certaine good women." Long after the introduction of fire-arms in the fourteenth century, the bow was used in battle as in that of Flodden Field; and even as lately as the days of Queen Elizabeth, fire-arms were so badly made that an archer is said to have been able to shoot six arrows in the time required for charging and discharging a musket. Even after the bow had almost, or quite, fallen into disuse in battle, yet archery was much practised as an amusement. The good and learned Roger Ascham not only amused himself with shooting at the hazel-wands and rose garlands, then used as marks, but published, in 1554, his "Toxophilus, or the Schole and Partitions of Shootinge," wherein he tells of the classical nature of the sport, and its connexion with Apollo. He praises the art as "the companion of vertue, the mainteyner of honestie, the encrease of health and wealthinesse, which admitteth nothinge in a maner into

his companye that standeth not with vertue and honestie." From this old advocate of the art, as well as from various other writers of those times, we find how greatly the "archer yew' was prized. Ascham says, "The best wood is yew; the colour should be uniform; those made of a bough are for the most part knotty, weak, and seldom wear to a good colour; the plant is better; but the bole of a tree is best of all." The churchyard yews scattered over the kingdom could have furnished but few of the boughs required, though doubtless they, as well as many other trees, both wild and planted, contributed their due proportion, when, by a statute of Edward IV., every Englishman, and Irishman residing in England, was commanded to have a bow of his own height, made of yew, wych-hazel, or awburne tree. Foreign yew was, however, preferred to that of English growth, and bows of "outlandish yew" sold at a high price. Michael Drayton says—

"All made of Spanish yew, their bows were wondrous strong."

Ships trading to Venice were desired to bring ten bow-staves along with every butt of Malmsey. Several of our British kings fell beneath the power of the bow, as Harold at Hastings, William Rufus, and Richard Cœur de Lion. It is, too, the most ancient of weapons, and even by the earliest Greek and Roman writers the yew was renowned as the material especially valued by the archer.

The trunk of the Yew-tree is short, thick, straight, and furrowed, and its wide-spread boughs, well filled with foliage, cast a broad shadow—a shadow which the

ancients believed would be fatal to one who slept beneath it. When fully grown, the tree is from thirty to forty feet high, and has at first a brown bark, which soon peels off. Its sessile rigid leaves, placed in two rows, are of a deep dark green, glossy above and paler beneath. The flowers are axillary and solitary; those having stamens are of a light yellowish hue, from their abundant pollen; and the pistil-bearing ones, surrounded with scales, somewhat resemble minute acorns. They are to be seen in March, as described by Bishop Mant—

> "Nor curious less the mountain yew,
> Which, 'mid its leaves of solemn hue,
> Its sulphur-coloured anthers now,
> In clusters on the dark-green bough,
> Here void of cup or blossom fair,
> Exhibits; and at distance, there
> Its verdant chalices minute,
> The embryos of its scarlet fruit."

The Yew grows wild in this kingdom in mountainous woods; and we may sometimes find a solitary yew standing on the hillsides, its deep verdure contrasting with the brighter tint of the grass. Such have we seen on the chalky hills of Kent, not far from Druidical remains, though not old enough or near enough to be connected with them, and we have thought of Wordsworth's lines—

> "This solitary tree, a living thing,
> Produced too slowly ever to decay,
> Of form and aspect too magnificent
> To be destroy'd."

The Yew was once abundant in the New Forest, but doubtless many of these trees of olden times have

perished by the axe; and as some of the old reasons for planting them exist no longer, they are now much fewer than in past ages, but there are spots in this kingdom where the tree grows in abundance. The Rev. C. A. Johns, in his "Forest Trees of Britain," says "that on cliffs near Coomb Martin, in North Devon, numbers of these trees grow in places accessible only to birds," and mentions also that the Yew Island in Loch Lomond furnished, a few years since, three hundred yews for the axe, while several noble trees yet remain there. "The most remarkable assemblage of yews in Great Britain," says this writer, "is at a place called Kingley Bottom, about four miles from Chichester. As to when or by whom they were planted, or indeed whether they were planted by the hand of man at all, history is silent. They are about two hundred in number; one half of them form a dense dark grove in the depth of the bottom; the remainder, smaller ones, are scattered over the sides of the valley, intermingled with fine plants of Juniper and Holly." The Yew is frequent in Scotland, and grows at a great elevation on the limestone rocks of Ireland, though rarely attaining there any great size. It is indigenous to most European countries, but it is almost unknown in Sweden and Lapland. Linnæus found it in but one place in the latter country, where the people called it *Id*, or *Idegran;* and Dr. E. D. Clarke, when in Sweden, saw it growing wild once only, and then not larger than a shrub, while it was reared with care, and regarded as a vegetable treasure, in the botanic garden of Upsal.

The "Baneful Yew," the epithet of Virgil, was parti-

cularly appropriate in times when men believed the tree to be very noxious. Pliny said, "It is unpleasant and fearfull to looke upon, as a cursed tree, without any liquid substance at all." The ancients sat not beneath its shadow, nor would touch of its fruits. They would not allow their beehives to be placed near it, lest the bee should suck its poison, nor would they have drunk wine from a bowl made of its wood. Shakspeare calls it the "double fatal yew," and even in later days, poets, influenced by their classic associations, have described it as injurious. Both in ancient and modern times, the plant has been used medicinally; and even within the present century, an Italian physician has stated that yew-leaves, when administered in small doses, have a similar power to the *Digitális*, in reducing the circulation; and that its juice, like that of the Foxglove, would prove fatal if taken too largely. Plutarch and Pliny both thought the coral fruits poisonous; and M. Decandolle and some other botanists regard them as dangerous; though Dr. Lindley considers that the seeds which lie in the scarlet cup are the noxious part. Sir J. E. Smith says that he has, in boyhood, eaten these sweet and juicy fruits without experiencing any ill effects; and the author of these pages ate them in childhood, year after year, and in great numbers, without injury; but the bitter seeds within were of course rejected. The leaves, especially those of the young shoots, are certainly, under some circumstances, poisonous to animals. Professor Wiborg, of Copenhagen, is of opinion that they are so only when eaten without the admixture of any other food; but that when eaten

with three or four times the quantity of wholesome vegetables, they are innocuous. Other botanists believe that they are poisonous only when in a withered state.

The Yew was formerly much used for hedges, and also for clipping into various forms, as cones, spires, and pyramids, birds, and animals. Even yet there exist in Kent trees familiar to us from earliest days, as uncouth representations of peacocks, while others still show a well-clipped surface, cut into a globular form. Professor Burnet, writing little more than twenty years since, remarks that two trees of this kind in Bedfont churchyard have been thus disfigured, for upwards of a century and a quarter, by the annual clipping of their shoots; and adds of these bird-shaped yews, that they have no chance of escape from this condition, some eccentric person having left an annuity that they may be thus clipped for ever.

Many venerable and picturesque yews interest us the more, from their connexion with history. Such are the magnificent trees near Fountain Abbey, beneath whose shadow the monks are said to have taken shelter while rearing the monastery. One of these trees, which is fifty feet high, is proved from old records to be upwards of eight hundred years old. Such, too, is the Ankerwyke Yew near Staines, supposed to be upwards of a thousand years of age, on which the assembled barons might have looked when the Great Charter was signed, and beneath whose shadow Henry VIII. is believed to have held tryst with the ill-fated Anne Boleyn.

The Yew is a useful tree. Its wide evergreen foliage is a shelter for birds, when shelter is scarce, and many

birds eat the berries. The wood is hard, close-grained, elastic, and durable, and forms excellent timber; while the yew-wood table is far more beautiful than that made of mahogany; and various ornamental articles are cut from the beautifully-veined trunk and root. As it will outlast almost every other wood, it is well-fitted for piles, posts, and other objects which are exposed to damp and weather; and it is a common saying in the New Forest, that "a post of yew will last longer than an iron one." The Celtic name for this tree is *Iw;* the French call it *If;* the Germans, *Ifenbaum*, or *Eichenbaum;* the Italians, *Taxo;* and the Spaniards, *Texo.* The Swiss term it William Tell's tree.

Class II. MONOCOTYLEDONOUS PLANTS.

The plants of this Class have either a single *cotyledon* or seed-lobe to their embryo; or, if two, these are alternate with each other. The stem is composed of woody fibre, cellular tissue, and spiral vessels, but there is no true bark nor pith, nor is there any trace of concentric annual layers, but wood and cellular tissue are mixed together. The stem increases by the addition of new matter within; hence the term Endogenous, or Growers Inwardly, is often applied to these plants. In our country the Monocotyledons are all herbaceous, and they may, in general, be readily distinguished by their leaves. These are commonly alternate, sheathing, and, in almost all cases, their veins run in parallel lines from the base to the points of the leaf, the principal veins being connected by nearly simple secondary veins, as in the Orchises and Grasses; while, in the Dicotyledons, the veins diverge from the mid-rib to the margins of the leaves, and are connected by smaller veins branching in all directions, and forming a network, as in the leaves of the Rose or Bramble. The flowers of Monocotyledons have *stamens* and *pistils;* three, or some multiple of three, being the number which predominates in the parts of fructification; and they are with or without a *perianth.* A large number of plants, forming Sub-class II., Glumaceæ, have chaffy scales or glumes, instead of sepals and petals. This comprehends the true grasses, and their allies, the sedges and sedge-like plants.

Sub-class I. PETALOIDEÆ.

Flowers having petals arranged in a circular manner; or without petals.

ORDER LXXXII. HYDROCHARIDEÆ. FROG-BIT TRIBE.

Flower-buds enclosed in a sheath; *sepals* 3, green; *petals* 3; *stamens* 3, 9, 12, or more; *ovary* inferior, 1 or many-celled; *style* 1; *stigmas*, 3—9; *fruit* dry or juicy, not bursting, 1 or many-celled. The plants of this Order are floating aquatics, possessing no known properties.

1. ANÁCHARIS.—*Stamens* and *pistils* on different plants; *barren flower* unknown in this country, but having a 6-parted perianth and 9 stamens; *fertile flower* with a long thread-like tubular spathe, 3 sterile stamens, and 3 stigmas; *capsule* 1-celled, few-seeded. Name said by the authors of the "British Flora" to be from the Greek *ana*, like, and *charis*, an abbreviation of the next genus.

2. HYDRÓCHARIS (Frog-bit).—Stamens and pistils on different plants; *stamens* 9—12; *ovary* 6-celled; *stigmas* 6. Name from the Greek *hydor*, water, and *charis*, elegance.

3. STRATIÓTES (Water-soldier).—Stamens and pistils on different plants; *stamens* 12—13, surrounded by many imperfect ones; *ovary* 6-celled; *stigmas* 6. Name from the Greek word for a soldier, because of its prickly, sword-shaped leaves.

1. Anácharis (Anacharis).

1. *A. alsinástrum* (Long-flowered Anacharis).—*Leaves* 3 or 4 in a whorl, linear, or oval oblong, thin, and minutely serrated; *roots* perennial, from the joints of the stem. This plant, which is but of recent introduction into this kingdom, has now a large number of localities. It is an aquatic, forming thick, entangled, submerged masses of considerable extent, and so heavy, that when cut, instead of rising, like most water-plants, to the surface, or floating onwards to the sea, it falls immediately to the bottom. Its slender whorled leaves are of a rather light green, and as thin as some of our grass-green sea-weeds, growing on a long, brittle, round, almost transparent stem, which branches in all directions, sending out at intervals its fibrous roots, and bearing among its whorls of leaves, from July to September, very small pinkish-green flowers. The whole plant both in form and structure is readily distinguished from every other of our native aquatics.

The smallest portion of this plant, having the root attached, will, if broken off, propagate itself immediately; and the history of the progress of this weed is now well known, and has become a matter of painful interest to many in this kingdom, though the mode of its introduction still remains a mystery. It appears to be identical with the American aquatic termed *Udóra Canadénsis*, or *Anácharis Nuttali*, and was originally discovered in this country by the late Dr. George Johnston of Berwick, in 1842, in the lake of Dunse Castle, in Berwickshire. The attention of several scientific men



1. LONG FLOWERED ANACHARIS
Anacharis alsinastrum.

2. FROG BIT.
Hydrocharis morsus rane

3. WATER SOLDIER

was at that time called to the plant, but for several years nothing further was heard of it, till it was seen again by Miss Kirby, in 1847, who observed it in the reservoirs adjoining the Foxton locks on the canal, near Market Harborough, in Leicestershire; and, as the locks had been cleansed about two years before, there was reason to believe that its introduction had been recent, although at that time it had become abundant in the water. Mr. Babington then published an account of this plant, and Dr. Johnston, on reading it, immediately recognised the description to be that of the same weed which he had seen some years before. On examining the loch of Dunse Castle, he found that this water-weed had not only accumulated there in great profusion, but that, having made its way out of the loch, it was forming matted patches in several places down the Whiteadder, in its course to the Tweed. In the same season it had appeared in the Lene, a tributary to the Trent in Nottinghamshire; and propagating itself with its usual rapidity, it soon formed so large an amount of aquatic herbage, that it threatened to block up one of the two streams into which the Trent there divides; while on the Trent itself it afterwards grew in such profusion, that in some parts of the river fishing became quite impracticable, the fishermen finding their nets unable to compete with this new and formidable vegetable hindrance. The plant was also found in the Watford locks, in Northamptonshire, growing in numerous and immense tangled masses.

It was in the summer of 1849 that this troublesome water-weed was first discovered in Derbyshire and

Staffordshire, where it formed, as it were, small green meadows on the water, both in the Trent and the adjoining canals; in 1850 it had gathered in profusion near Rugby in Warwickshire, and in the following year it had appeared in the Cam at Cambridge, behind the colleges, and by its growth so clogged up the river, that the barges which had to make their way through its clumps required the aid of extra horses. The collegians were, by its masses, prevented from rowing, as it not only impeded the course of a boat, but would even overturn it; while the most skilful swimmer became entangled in its toils. Bathers found it clinging to their limbs "like scratch-weed," and in more than one case fatal accidents ensued, in consequence of its intertwining branches. It was afterwards observed at Ely, where it occasioned immense trouble by choking up the railway dock; and an engineer found that, in the year 1852, it had so hindered the drainage in the fenny parts of Cambridgeshire and Huntingdonshire, that it was equivalent to a rise of one foot in the outlet level. Mr. Marshall of Ely, who has given great attention to the progress of this weed, and who, in 1854, published a pamphlet recording his observations, says, "The specific gravity of this plant is so nearly that of water, that it is more disposed to sink than float; and the cut masses may be seen under water, either on or near the bottom, rolling over and over, like woolpacks, clinging to everything they meet with, and accumulating in great quantities in locks and bridges, and grounding in shallow water. Its mode of growth may be best seen in still and shallow waters, where it seems to spring first from

the two sides and the bottom, meeting at length in the middle, and completely filling up the water-course, as I have seen in some cases, almost to the exclusion of the water."

Since the second discovery of the Anacharis in 1847, the plant has been found making its progress every season into some new or hitherto unobserved locality; and, during the course of the last year, 1855, it was seen for the first time growing in abundance in a land-drain at Weybridge and Walton, which empties itself into the Thames, blooming there in profusion.

None of the theories respecting the introduction of this plant into the Dunse loch are very satisfactory; but when once the weed reaches the waters in the centre of England, its dissemination ceases to be a mystery. Mr. Marshall, in a communication made to the "Gardener's Chronicle," in 1853, says, "In the letter which I published last year on this remarkable plant, I stated that when once introduced, it would, in a few years, inoculate any connected water system from one end to the other. I added, that if any one would look at a good map of England, it would appear that there was hardly a spot so well situated as a centre from which to inoculate our English rivers, as Rugby, or the Watford locks near the Crick railway, where it was found in profusion. From such a point, situated at an altitude above the sea of 350 feet, and very nearly at the line of water-shed which divides England into the river basins of the Severn on the west, the Trent on the north, the Ouse on the east, and the Thames on the south; a few detached pieces travelling different ways would

enter the Severn through the Avon, by the way of Rugby and Warwick; the Thames, through the Cherwell; the Nene, above Northampton; the Ouse at Buckingham; the Welland at Market Harborough; the Trent by the Anker, Tame, and Soar; from the Soar it might enter the Witham, through the Grantham Canal, and thence by Lincoln into the water-courses which drain the fens of North Lincolnshire, and which now are so full of this weed; while, at the junction of the Trent with the Humber, that large river and its tributary streams might have been visited by this troublesome emigrant."

In some instances, from an inexperience of the injury done by this water-weed, it has been intentionally introduced. This was the case in regard to the river Cam. In 1847 a specimen was brought from the Foxton lock, and placed in a tub in the botanical garden of Cambridge; and in the succeeding year a small portion of the weed was placed there in the conduit stream, the exact spot being, as usual in such cases, indicated by a small stick. In the next year the plant had not only quite covered the stick from view, but had extended itself and spread all over the ditch. Thence it made its way into the Vicar's brook; thence into the Cam. "Thus," says Mr. Marshall, "we see proved to demonstration, that the short space of four years has been sufficient for one small piece of Anacharis to multiply so as to impede both navigation and drainage." A story is current that a lecturer on botany, in Scotland, who was remarking on the peculiarities of this plant, directed his hearers to look for specimens in a neighbouring

canal, in which he assured them he had, some time since, planted the weed, and where indeed they found it. In the course of some time the evil thus inadvertently introduced had so injured some water-works by its masses, that the owner of the water threatened the lecturer with legal proceedings for having brought it there.

A remarkable circumstance respecting this weed has led to the inference that all the plants in this country have proceeded from a single piece. The flowers bearing pistils and stamens occur on different individual plants, and in every specimen of the Anacharis seen in this kingdom, the pistil-bearing flower only is found,—and thus it is not, as in the rivers of America, propagated by seed. In that country an identical or closely allied species exists in profusion, but in the more rapid waters it is not injurious, as in the still or slow-moving streams of this kingdom.

Although the Anacharis was at one time so abundant in Dunse loch that a boat could with difficulty be pulled among it, yet it has now quite disappeared from that place. A correspondent in the "Berwick Warder" attributes its removal to the swans, though these birds, he says, were accused of having originally brought it there. He remarks that the swans lived entirely on this plant, throve well, rearing a numerous family on the quiet waters, till the year 1851, at which period the plant disappeared; the birds then seemed to pine, and finally all died, save the original pair. These swans, no longer able to find this favourite food in the loch, followed the small burns down to the Whiteadder in search of it,

and seemed to be its most relentless persecutors. Swans, as well as ducks, geese, and other aquatic fowls, will probably aid in its destruction, as they destroy the weeds which they feed upon; and an observer of their habits remarks, that "they have been known, when water-weeds were scarce, to eat through large masses of white lilies, leaving nothing but the stem. Everything less strong in its growth than the Yellow Water-flag seems to be destroyed by the cropping of these birds."

The Anacharis is called by the fishermen the Water Thyme, from a very slight resemblance to the foliage of Thyme, in the form of the young branches clad with leaves.

2. Hydrócharis (Frog-bit).

1. *H. Mórsus-ránæ* (Common Frog-bit). — *Leaves* stalked, kidney-shaped, entire; *flowers* springing from a membranous sheath; *root* perennial. The large white clustering blossoms of this plant float on many ponds and stagnant waters during July and August. They are thin and crumpled like the petal of a poppy, but are white and glossy, and sometimes tinged faintly with pink, their satiny surface looking almost like mother-of-pearl in its iridescent hues. The long roots proceed at intervals from the horizontal floating stems, and the glossy green roundish leaves have long stalks, and show very distinctly the veins which run from the base to the top. The fruit is a roundish leathery capsule, containing many seeds. This plant was called by the old writers Lesser Water Lily. Its name of Frog-bit, given from the reptile which haunts its neighbourhood, has its

synonym in several Continental countries. It is the *Froschbiss* of the Germans, and the *Vorschenbeet* of the Dutch. The Russians term it *Liaguschnik*, and the French *Moréne;* and it ornaments the still waters of many European lands. It does not occur as a Scottish wild flower, nor is it one of the most common aquatics in England, though if planted it grows very readily, and deserves to be more frequently introduced into the streams and pools of gardens.

3. Stratiótes (Water-Soldier).

1. *S. aloídes* (Water-Soldier).—*Leaves* sword-shaped, triangular, prickly ; *root* perennial. Except in the fenny parts of Norfolk, Lincolnshire, and Cambridgeshire, the Water-soldier is a rare wild flower, and it is especially so in the north of the kingdom. It is one which would immediately attract attention by its dissimilarity from any other native plant, and its resemblance to an aloe. Its numerous rigid prickly dark-green leaves rise from the creeping runners which are embedded in the mud at the base of the lake or ditch. The flower-stalk is about five or six inches long, flattened and two-edged. It bears, at its summit, a two-leaved sheath, out of which arise several very pretty, large, delicate white flowers, having stamens, or one flower only, bearing pistils. During the greater part of the year the plant remains submerged, but it raises itself to light and air during the flowering season, and then sinks to the bottom. The seeds sometimes ripen in the waters, but the plant is chiefly increased by offsets. The joints of the runners are furnished with small drooping buds on

long stalks, these buds being composed of two scales folded together, between which may be seen, curiously enfolded, the embryo leaves of the future shoot. The leaves are much like those of the aloe, but of darker green, and have rigid, pellucid, sharply-pointed teeth. It appears to have been planted in the Scottish lakes, as well as in some English pools ; as in those of Wandsworth Common, in Surrey, where it was introduced by Mr. Dickson. It increases so rapidly as to become troublesome in ornamental pieces of water, and is said to be acrid ; and, when growing in large quantities, to njure the water, and render it unwholesome. It is often called Water Aloe. The French term it *Aloides ;* and the Germans, *Wasserfeder*.

ORDER LXXXIII. ORCHIDEÆ.—ORCHIDEOUS TRIBE.

Perianth of 3 sepals, usually coloured, and 3 petals, the lowest unlike the others, and often spurred; *stamens* and *styles* united into a central column ; *anther* of 2—4—8 cells, containing pollen which is either powdery or granular, but more frequently consists of waxy masses sometimes raised on minute stalks ; *stigma* a moist hollow in front of the column ; *fruit* a 3-valved many-seeded capsule. The Orchideous tribe consists of herbaceous perennial plants, those which are fixed in the ground having usually one, two, or more fleshy knobs attached to the crown of the root, and bearing very handsome and singular flowers. The tropical species

grow on trees, in the crevices of the bark, and have twisted and often stem-like roots. The groups of this Order have been arranged by botanists according to the different condition of the pollen masses, and the manner in which these adhere into lobes.

1. Malá̓xis (Bog Orchis).—*Sepals* spreading, lip very small, erect, without a spur; 2 *side petals* turning upwards; *column* round and very short; *germen* on a twisted stalk. Name from the Greek *malaxis*, softness, in allusion to the delicate texture of the species.

2. Líparis.—*Perianth* spreading, lip flat, expanded, entire, turned backwards; *column* long. Name from the Greek *liparos*, unctuous, in allusion to the surface of the leaves.

3. Corallorhíza (Coral-root).—*Sepals* converging; *lip* prolonged at the base, its spur connected with the ovary, or free; *column* free; *ovary* and its *stalk* straight. Name from the Greek *corallion*, coral, and *riza*, a root, from the form of the roots.

4. Epipáctis (Helleborine).—*Perianth* spreading, lip swollen below, the extremity either entire or 3-lobed, the middle lobe the largest, and contracted in the middle; *germen* straight, on a twisted stalk. Name given by the Greeks to some species of Hellebore.

5. Lístera (Bird's-nest or Tway-blade).—*Perianth* converging; *lip* 2-lobed, and turned downwards; *pollen* farinaceous. Named in honour of Dr. Martin Lister.

6. Neóttia (Lady's Tresses).—*Perianth* ringent, the two lateral sepals erect; *lip* channelled, bell-shaped, embracing the wingless column, and uniting below with

its base; *spike* spiral. Name from the Greek *neottia*, a bird's nest.

7. Goodyéra.—*Perianth* ringent, the two sepals placed beneath the lip, which is swollen at the base, and entire at the extremity; *column* free. Named in honour of Mr. John Goodyer, an English botanist of Queen Elizabeth's time.

8. Órchis.—*Perianth* ringent, hooded; *lip* 3-lobed, spurred. Name from the Greek *orchis*, which was given to plants with double tuberous roots.

9. Gymnadénia.—*Perianth* ringent; *lip* spurred at the base beneath. Name from the Greek *gumnous*, naked, and *aden*, a gland, because the glands on the stalks of its pollen masses are uncovered, and not, like those of the Orchis, enclosed in a little pouch; a circumstance which chiefly distinguishes this from that genus.

10. Habenária (Butterfly Orchis).—*Perianth* ringent, hooded; *lip* 3-lobed or entire, spurred. Name from *habena*, a thong or strap, from the shape of the spur.

11. Áceras (Man Orchis).—*Perianth* ringent, hooded; *lip* 3-lobed, without a spur. Name from *a*, without, and *ceras*, a horn, in allusion to the absence of the spur.

12. Hermínium (Musk Orchis).—*Perianth* bell-shaped with erect segments; *lip* 3-lobed, swollen beneath at the base, without a spur. Origin of name uncertain.

13. Óphrys.—*Perianth* spreading; *lip* variously lobed, without a spur. Name from *ophrus*, the eyebrow, the plant having been said by Pliny to be used in staining the eyebrow black.

14. Cypripédium (Lady's Slipper.)—*Perianth* spreading; *lip* large, inflated; *column* with a large terminal


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dilated lobe, or sterile stamen separating the two anthers; two lower lateral sepals often combined. Name from *Cupris*, Venus, and *podion*, sock, or slipper.

1. Malaxis (Bog Orchis).

1. *M. paludósa* (Bog Orchis).—*Stem* with from 3 to 5 leaves, which are oval and concave; *lip* concave, acute; *root* perennial. This species, which is the smallest and least attractive of our native orchideous plants, grows plentifully in the valleys of the Clova mountains, and occurs also on spongy bogs in several parts of the kingdom. It is found among, or rather on, the roots of the large mosses common to such places, bearing, from July to September, a small but long spike of yellowish-green blossoms, on an erect stem from two to four inches in height. The flowers are very small, the sepals egg-shaped and spreading, two turning upwards, their bases embracing the base of the upper lip. The leaves are fringed at the upper part with minute tubercles, rendering the margin roughish. These tubercles had been believed by Sir W. J. Hooker to be little bulbous leaf-buds, and were fully ascertained to be so by Professor Henslow, who examined some of the plants which grew in great plenty on Gamlingay Heath, in Cambridgeshire. "Every specimen which I gathered," says this botanist, "exhibited this fringe in a greater or less degree, and it required only the assistance of a common lens to show that it was occasioned by numerous little bulbous germs spreading from the edge and towards the apex of the leaf. They were of the same colour as the leaves, green

on those which were more exposed to the light, and quite white on those which were lowest on the stem, and half buried in the peat and moss. Some of these germs were so far advanced as to have put forth the rudiments of two or three leaves, and others less so." This Orchis often forms little groups of half-a-dozen or more plants. John Ray describes it as growing in his time in divers places in Romney Marsh, in Kent.

2. Líparis (Liparis).

1. *L. Loesélii* (Two-leaved Liparis).—*Leaves* 2, broadly lanceolate; stem triangular; *lip* entire, longer than the perianth; *root* perennial. This, which is a much rarer plant than the preceding, is found also on spongy and sandy bogs in Norfolk, Suffolk, and Cambridgeshire, and Dillwyn found it in East Kent, growing at Ham ponds. Its stem is about six inches high, and its flowers, which expand in July, and are of a yellowish colour, grow in the form of a loose spike. The plant is thought by some writers to grow upon the roots of moss; and the authors of the "British Flora" remark, that the general structure of the flower is very similar to that of the tropical and parasitical *L. foliósa*. The genus is by some botanists termed *Stúrmia*.

3. Corallorhíza (Coral-root).

1. *C. innáta* (Spurless Coral root).—*Spur* very short, or wanting; *root* of thick fleshy fibres, perennial. This is a rare plant of boggy woods, found in some parts of Scotland. Its stem is from six to twelve inches high, and it bears, in July, a few yellowish flowers in a short


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loose spike. The sepals are keeled and spreading, lanceolate and acute, and the petals are shorter, while the oblong lip is waved, and sometimes lobed, at the margin, and has a few purple spots. The plant has no leaves, and is distinctly characterized by the intertwining fibres of its roots, which, as our plate will show, resemble a piece of branched coral in form, though of pale-brown colour. It is a native of boggy soils in the northern part of the globe, and is of most difficult cultivation.

4. Epipáctis (Helleborine).

1. *E. latifólia* (Broad-leaved Helleborine).—*Leaves* oblong or egg-shaped, many-nerved, embracing the stem, upper ones narrower; *raceme* long and many-flowered, lower bracts longer than the flowers; *upper lobe of the lip* broadly egg-shaped, or somewhat heart-shaped at the base, broadest below the middle, with two protuberances on the disk as long, or nearly as long, as the sepals, and almost entire. Several varieties of this species occur, differing in the shape and breadth of the leaves, and in the size of the upper lobe of the lip. The Broad-leaved Helleborine is not unfrequent in the woods of mountainous countries, and is found both in woods and on mountain slopes in some parts of this kingdom. The flowers appear in July and August, and vary in the different forms from purplish-green to an intense purple. The stem is from one to three feet high, the leaves always becoming narrower towards its upper part, and the root creeping, with long fibres.

2. *E. palústris* (Marsh Helleborine).—*Leaves* lanceo-

late, embracing the stem ; *bracts* generally shorter than the flowers ; *upper lobe of the lip* roundish oval, or inversely egg-shaped, broadest at or above the middle, crenate, very blunt ; *root* perennial. This, which is not a rare species, is found on wet lands, chiefly in moist places, near chalky soils. The flowers, which are somewhat drooping, grow in a lax spike, on a stem about a foot or a foot and a half high. The stem is sometimes tinged with purple. The sepals are purplish-green, the petals and lip white, varied with rose colour.

3. *E. grandiflóra* (Large White Helleborine).—*Leaves* egg-shaped, or somewhat lanceolate, sessile ; *bracts* longer than the smooth germen ; *sepals* erect, blunt ; *upper lobe of the lip* oval, abruptly blunt, shorter than the rest of the petals; *root* creeping and perennial. This is a very pretty and conspicuous plant among trees and bushes, on a chalky soil.

"It grows in deep green woods with tangled alleys,
Where hues of sunshine stream athwart the trees,
Where moss the thickest springs in dewy valleys,
Where tassell'd grasses nod upon the breeze ;
Where rambling wreaths delay the rash intruder,
Holding him fast as each would notice claim,
Where slender sapling twigs, a barrier ruder,
Close round him o'er the path through which he came."

In many parts of Kent it is in some seasons common in the woods, its stem usually rather more than a foot high, though in woods near Barfreston, in this county, we have found it two feet and a half in height. The flowers grow on the upper part of the stem, in a distant spike, during May and June. They are of large size, the sepals nearly all equal, including the



small lip marked with raised lines, and which, though white externally, is yellowish inside. The hue of the flower differs a little in different specimens; in some it is pure as snow, in others delicately cream-coloured. The leaves are broad, and bright green and glossy. Some writers place this and the following species in a distinct genus, termed *Cephalanthera*.

4. *E. ensifólia* (Narrow-leaved White Helleborine).—*Leaves* lanceolate; *bracts* much shorter than the smooth germen; *upper lobe of the lip* blunt and included; *root* creeping and perennial. This is a rare plant of mountainous woods, flowering in May and June. Its large blossoms are somewhat spiked, and are white, the lip marked with several white lines and a yellow spot in front. The stem is usually more than a foot high.

5. *E. rúbra* (Purple Helleborine).—*Leaves* lanceolate and acute; *bracts* longer than the downy germen; *upper lobe of the lip* pointed and marked with raised lines; *root* creeping and perennial. This is a very rare plant of mountainous woods in England. The flowers are large and rose-coloured, expanding in June and July, and forming a loose spike on a stem about a foot in height.

5. Líster a (Bird's-nest or Tway-blade).

1. *L. ováta* (Common Tway-blade).—*Stem* with only two opposite egg-shaped leaves; *column of fructification* with a crest which includes the anther; *root* perennial. This plant, well named Tway-blade, is readily distinguished from all our native Orchids by the two broad,

glossy, green, strongly nerved leaves, often four inches long, and placed about halfway up the stem. The plant is from a foot to a foot and a half high, the flowers small in proportion to leaf and stem, of a yellowish-green hue, and forming a long loose spike in the month of June. It is found in shady places, in orchards and pastures, and still more commonly in woods. Its root is composed of numerous long fleshy fibres, connected in bundles by a main fibre.

2. *L. cordáta* (Heart-leaved Tway-blade).—*Stem* with two opposite heart-shaped leaves ; *column* without a crest; *lip* with a tooth on each side at its lower part ; *root* perennial. This is a much smaller species than the last, its stem rarely exceeding five inches in height, and its smooth leaves being usually little more than an inch long. It produces a few dull brownish-green flowers, very small, and forming a loose spike; these expand from June to August, and have somewhat spreading sepals and a narrow drooping lip ; the root consists of a few stout fibres. It occurs in mountainous districts and on turfy moors, in the north of England, Ireland, and Scotland.

3. *L. Nídus-ávis* (Common Bird's-nest).—*Stem* leafless, but beset with sheathing scales ; *column* without any crest ; *lip* linear-oblong, with two spreading lobes ; *root* perennial. This is a very singular plant—stem, scales, and flowers all being of a dingy brown hue ; so that its first appearance is that of a withered stem, till on examination we observe its succulent nature. Its sombre aspect and leafless condition, so like that of some of our native parasitic plants, as well as its growth

among the fallen leaves around the trunks of trees, led to the opinion that this Orchid was parasitical in habit. Mr. Bowman, who examined this Orchid with much care, says, "It has long been doubted whether it is strictly parasitical. Whatever it may be in the earlier stages of its growth, it certainly is not so in its more advanced state. If it be carefully got up in a clod, and the soil afterwards washed from around it, the leaves (that is, the scaly appendages) of the central root, or caudex, may be seen to terminate in a short curved spur, which tapers to a fine point, and evidently is not attached to any other vegetable. The cuticle of the stem and its bracts have no perspiring pores."

This plant received its old name of Bird's-nest from the short, thick, fleshy entangling fibres of its roots, which might remind us of the sticks used by some of our larger birds in the framework of their nests. The young plants are produced from the extremities of these roots. The Bird's-nest Orchis flowers in June; its thick fleshy stem is about a foot high, and the scales which sheath it are very succulent; the blossoms grow in a long spike. This plant is the original *Neóttia* of Linnæus, and many botanists separate it into a genus of that name, the following genus being by them termed *Spiránthes*.

6. Neóttia (Lady's Tresses).

1. *N. spirális* (Fragrant Lady's Tresses).—*Root-leaves* oblong; *stem-leaves* like bracts; *spike* twisted; the flowers all pointing one way; *root* perennial, and

formed of three or four thick knobs about as large as a hazel-nut. The spiral arrangement of the blossoms of this pretty and delicate flower readily distinguishes this and the next species from our other Orchids. The blossoms are greenish-white, the upper sepal and the two lateral petals are combined, and the lip is longer than the rest of the flower, which is altogether somewhat bell-shaped in form. The spike sometimes twists from right to left, but at others in the opposite direction. The stem, which is from four to six inches high, is of a pale, almost sea-green hue, and the stem leaves are of the same tint, and slightly downy. The flowers have a sweet though not powerful fragrance, the odour increasing in the evening. The leaves around the root are of a bright glossy green, but they do not appear till the flowers are fully blown. At the time when the flower raises its spike above the decayed leaves of the last autumn, a new tuft of leaves springs from just above the root, to prepare for the following season. The Rev. C. A. Johns remarks that the foliage is so tenacious of life that it continues to unfold even while subjected to the pressure made by the blotting-paper in the process of drying. The plant is often called the Autumnal Lady's Tresses, as it flowers in September and October. It is not unfrequent on dry pastures. On some of the grassy hill-sides of Dover it is common, and the author has found it in profusion in dry meadows about Tunbridge Wells.

2. *N. æstivális* (Summer Lady's Tresses).—*Root-leaves* oblong-lanceolate, those of the *stem* lanceolate and narrow; *spike* twisted; *root-knobs* cylindrical; *root*

perennial. This is a very rare plant of bogs and marshes. Its recorded places of growth are a bog between Lyndhurst and Christchurch, in the New Forest, Hants, and St. Ouen's Pond, Jersey. It was also found, in August 1854, in Wyre Forest, Worcestershire, by Mr. Jorden, of Bewdley. The germs on the flower-stalks are placed regularly one above another, somewhat resembling plaited tresses; and both this and the last species are suggestive of various modes of hair-dressing used by ladies in olden times, and rendered familiar to us by their portraits. The flowers are greenish white, in a lax spiral spike, and have a longer lip than those of the last species.

3. *N. cérnua* (Drooping Lady's Tresses).—*Root-leaves* linear-lanceolate, *stem-leaves* lanceolate, somewhat triangular; *bracts* shorter than the flower; *spike* crowded, 3-ranked; *sepals* and *petals* equal; *lip* blunt; *root-knobs* long, cylindrical, and perennial. This species is the rarest of all European Orchids. It was not known to be a British plant until the year 1810, when it was discovered by Mr. Drummond, at Castleton Bearhaven, County Cork, in Ireland. It then disappeared until the year 1841, when it was re-discovered on the same spot, and sent to Dr. Woods, of Cork. It is the only known European locality for the plant, though it is found in some parts of America. The fragrant greenish-white flowers grow, in August and September, on a somewhat short stem, forming a spike about half an inch long. The plant is by some writers called *Neóttia gemmípara*.

7. Goodyéra (Goodyera).

1. *G. répens* (Creeping Goodyera).—*Lower leaves* egg-shaped and stalked; *sepals*, *petals*, and *lip* egg-shaped, lanceolate; *root* creeping, perennial. This plant is found in Fir forests at the north of this kingdom, especially in the Scottish Highlands. Its stem is about six inches high; its leaves are mostly from the root; and it has narrow leaf-like bracts. The small white flowers grow during August, in a spiral spike. The whole of the upper part of the plant is covered with minute glands. Mr. Loudon remarks of its creeping roots, that unlike those of most Orchids, the plant may be increased by division.

8. Órchis (Orchis).

1. *O. Mório* (Green-winged Meadow Orchis).—*Lip* 3-lobed, slightly crenate, middle lobe margined; *sepals* and *petals* blunt, ascending, hooded; *spur* blunt, rather shorter than the germen; *root* perennial, of two undivided knobs. This is not an unfrequent plant of the English meadow, during the month of June. It grows among the grass, either hiding amidst its blades or rising above them, varying in height from half a foot to a foot. The flowers are few, forming a loose spike, and may be distinguished by their purple sepals, which are marked with green veins, and curved upwards so as to form a kind of helmet over the rest of the blossom. The lip is purple, pale in the middle, and marked with purple spots.

2. *O. máscula* (Early Purple Orchis).—*Lip* 3-lobed, somewhat crenate, the middle lobe margined; *sepals*



acute, the two lateral ones turning upwards; *petals* converging; *spur* blunt, rather longer than the germen; *root* perennial, of two undivided knobs. This is the commonest of our native Orchises, and all who delight to roam in green meadow or leafy woodland, during May, have mingled it with their spring flowers. Speaking of this plant, Bishop Mant says:—

> "In that broad field of springing grass,
> First of his lip and hornèd class,
> The early-flowering Orchis show'd
> His smooth and spotted leaves, and glow'd
> With spiky stalk elate, and head
> Of spiral blossoms purple red."

The succulent stem is about a foot high, generally more slender than that of the last species, and tinged more or less with purple. The upper leaves mostly clasp the stem; the lower ones grow chiefly from the root, and are oval-lanceolate, of a bright glossy green, generally spotted with dark purple. The flowers form a loose spike, each flower rising from a somewhat twisted germen, and having a long spur turning upwards. Their colour is usually of a rich reddish-purple, but it is sometimes pale lilac, the centre of the lip whitish at the base, spotted and downy, and the sepals are without veins. The flowers are in the daytime slightly fragrant; but in the evening the odour increases, and becomes, if exhaled in an apartment, most powerfully disagreeable.

All the European species of Orchis have roots formed of two lobes, sometimes entire, and sometimes divided, and furnished with thick fleshy fibres. One of these lobes is destined to outlive the other; and on examining the roots we find one of them plump and vigorous,

while the other is wrinkled and withering, about to be succeeded, however, by a new one on the opposite side. The plump knob is, in fact, an offset of the other, and has a new white bud rising on the top of it, from which the stem of next year is destined to emerge. In consequence of this mode of growth, the actual position of the Orchis plant is changed about half an inch every year; for the new bulb invariably takes its origin from a point in the solid bulb exactly opposite to the decayed one, and thus—

"The orchis takes
Its annual step across the earth;"

and it will be found, in the course of a dozen years, to have moved several inches from its original station.

The roots of this and the green-winged Meadow Orchis furnish the substance called "salep," which was long imported from Turkey and other parts of the Levant, until it was discovered that our native plants could supply it. Salep is little used now in this country; but, less than a century since, the Saloop-house was much frequented, and the substance was a favourite repast of porters, coal-heavers, and other hard-working men. It is said to contain more nutritious matter, in proportion to its bulk, than any other known root, and an ounce of salep was considered to afford support to a man for a day; hence, those who travel in uninhabited countries have greatly prized so portable a vegetable food. It is still much used in Eastern countries; and a friend of the author's, long resident in India, remarks in a letter, "Many a good basin of the thick salab gruel, prepared from the ground-dried root of an Indian Orchis, have

I swallowed, and found highly nutritious. It is called in Hindoostanee, *Salab-ee-misree;* hence, I suppose, Salep or Saloop." Forskhall says that the plant which furnishes this substance is in Persia called *Sahleb.* The farinaceous powder is prepared by washing the root-knobs, and drying them in an oven; salep, made some years since in Gloucestershire from the early Purple Orchis, was found to be quite equal to what was imported. The tuber should be taken up when the plant is in seed, and the stalk about to fall from it. It is then at its full size, and about as large as a pigeon's egg.

With the exception of salep, our British species of Orchis yield no useful substance. The showy foreign kinds are scarcely more productive. A kind of cement or glue is obtained from the roots of some exotic species; and the vanilla used in flavouring chocolate and other sweetmeats is the dried fruit of the *Vanílla Aromática.*

3. *O. ustuláta* (Dwarf Dark-winged Orchis).—*Sepals* dark purple, forming a helmet including the two small petals; *lip* white, with raised purple dots; *spur* and *bracts* about half as long as the germen; *root* perennial; *root-knobs* two. This Orchis is readily distinguished by its low growth, and dark brownish-purple colour, in some specimens so dark, that before the flowers are fully expanded they look as if they had been blackened by a scorching flame. The spike is oblong, the flowers small, and usually more crowded than in the specimen represented by the plate. They expand in May and June, on a stem about four inches high. The leaves are deep green. The plant grows on chalky hills and

pastures, and is not one of our common Orchises; though in some parts of the neighbourhood of Dover it is so plentiful that we have gathered from a single bank as many as twenty specimens, and still left an abundance for other lovers of wild flowers. It has a faint and delicate odour, like that of boiled cherries.

4. *O. fúsca* (Great Brown-Winged Orchis).—*Lip* 3-lobed, with raised rough dark-red spots, the lateral lobes linear-oblong, the middle one large, inversely heart-shaped, crenate, with an intermediate tooth; *sepals* rather blunt, hooded, and including the petals; *spur* blunt; *root* of two undivided knobs, and perennial. This, which is the largest and tallest of our Orchises, is commonly about one or two feet high. In Kent, which from its chalky soil is famous for its Orchids, this plant is, in May, often very conspicuous in the woodlands and on the bushy hill; and it seems to be peculiar to that county. It is sometimes plentiful; and the author of these pages has gathered it in a wood near Chatham, with a stem two feet five inches in height, and bearing a dense spike of numerous flowers, so large that two hands could scarcely enclose it. It is often carried into the towns in baskets for sale, mingling among green Tway-blades, and dim brown Bird's-nest Orchises, and overhung by the graceful ferns, the Male-fern, the Bracken, and glossy Hart's-tongue. Kentish country people call it the Lady Orchis; and the reader may see, by glancing at our plate, that though its form is not very suggestive of its name, yet that there exists some slight similarity in each blossom to a lady attired in wide-spread gown and close bonnet. The leaves are



1 MILITARY ORCHIS
Orchis militaris.

2 MONKEY O
O. simia.

3 LAX FLOWERED O
O. laxiflora

4 MALE O
O. [illegible]

oblong, blunt, bright green, and glossy. The helmet is brownish-purple and variegated, and the lip of a paler hue.

5. *O. militáris* (Military Orchis).—*Lip* deeply 3-lobed, with rough raised points; the two *side lobes* linear-oblong short; the *middle lobe* broader at the extremity, with an intermediate tooth; *sepals* hooded, including the two petals; *spur* blunt, about half as long as the germen; *bracts* short; *root* perennial; knobs two and undivided. This plant is very similar to the last in the structure of its flowers, and is intermediate in this respect between that and the following species. It is much smaller than the Great Brown-winged Orchis; the helmet is of a pale ash colour, the lip deep purple, white in the middle, and spotted. It occurs on chalky hills in Berkshire, chiefly about Reading; and also in Oxfordshire, Buckinghamshire and Herefordshire, flowering in May.

6. *O. tephrosánthos* (Monkey Orchis).—*Lip* 3-parted; the two *side lobes* long and narrow, the middle one deeply cleft with an intermediate tooth; *sepals* pointed, hooded, including the two petals; *spur* half as long as the germen; *bracts* very small; *root* perennial, of two knobs. This beautiful and curious Orchis is somewhat slender, and bears in May a spike of pale purple-spotted flowers, with a lip cut into deep segments of darker purple. Some botanists doubt if it is truly distinct from the last species. Professor Lindley terms it *O. mácra*; and Mr. Babington, *O. Símia*. It is found on chalk hills in Oxfordshire, Berkshire, and Kent.

7. *O. laxiflóra* (Lax-flowered Orchis).—*Lip* 3-lobed; *lateral lobes* rounded in front, longer than the intermediate lobe; *spur* shorter than the germen; *lateral sepals* turning backwards, middle one erect; *petals* hooded; *root* perennial, of two knobs. This plant is found in wet grassy lands in Guernsey and Jersey. It is a handsome flower in May and June. Mr. Babington remarks, that it is allied to *O. mório;* but that plant has single-nerved bracts, and all the segments of its perianth, except the lip, are hooded, the short spur also affording a distinctive character. The stem is one or two feet high, the flowers of a bright purple, the leaves lanceolate or linear-lanceolate.

8. *O. latifólia* (Marsh Orchis).—*Lip* scarcely 3-lobed, its sides slightly turning under; *sepals* spreading, the two petals hooded; *spur* cylindrical, shorter than the germen; *bracts* as long as the flower, sometimes longer; *root* perennial. A very pretty flower is the Marsh Orchis, and a very frequent one, too, on marshy meadows and damp grassy lands in June and July, growing among the rich drooping clusters of the waxy pink cross-leaved heath, and the green or pale and rosy-tinted bog mosses. It is a tall and somewhat slender plant, with a hollow stem about a foot high, and leaves remarkably erect and pointed. The flowers are sometimes of a pale pinkish hue, but oftener deep lilac or purple, the lip dotted and streaked with purple; while, on the sands of Barrie, they have been found perfectly white. The long bracts taper to a point.

9. *O. maculáta* (Spotted Palmate Orchis).—*Lip* flat 3-lobed; *sepals* spreading, the two petals hooded; *spur* shorter than the germen; *bracts* varying much in length,



1 PURPLE FALSE HOODED ORCHIS
Orchis spectabilis

2 PYRAMIDAL ORCHIS
Orchis pyramidalis

3 LIZARD ORCHIS
Orchis hircina

4 FRAGRANT GYMNADENIA
Gymnadenia conopsea

sometimes as long as the flower; *upper leaves* linear-lanceolate, lower ones mostly blunt, and spotted with purple. The delicate lilac, or occasionally white, flowers of this Orchis grow on a solid stem about a foot high in June and July, forming at first a short spike, which afterwards lengthens. The flowers are streaked and spotted more or less with purple, especially the lip, which is deeply lobed, having the side-lobes rounded, and the middle-lobe longest. It grows in abundance on heaths and pastures, where the soil is moist. Its leaves are slender and distant.

10. *O. pyramidâlis* (Pyramidal Orchis).—*Lip* with three equal lobes and two tubercles at the base above; *lobes* oblong, blunt as if cut off; *sepals* spreading, pointed; *spur* very slender and longer than the germen; *leaves* linear-lanceolate, tapering. This lovely Orchis is not unfrequent on the chalky soils of various parts of England, growing among grass. Many a fine specimen may be gathered from the cliffs of Dover, while some grow there on spots inaccessible even to the most adventurous foot-steps; but, gleaming among the verdure, are conspicuous afar off in their tint of rich crimson purple,—so rich that the artist despairs of imitating it on paper. The stem is from twelve to eighteen inches high, bearing, in July, a short, broadly-conical cluster of crowded flowers, spirally arranged, the spike becoming longer with age. The bulging protuberance of the lip, and the long slender spur, are marked features of this Orchis. The leaves sheathe the stem, about five or six growing from the root. The flowers are sometimes white, and in some rare instances double; and the plant has an odour

which to some is pleasing, though we cannot praise it. Douglas Allport, in some verses on this flower, tells of the power of the gathered blossom to recal the scenes amid which it once grew :—

"Thus, when within my sunless room,
Heart-sick and worn with Mammon's leaven,
Thy pyramids of purple bloom,
Blush through its loneliness and gloom,
The spirit bursts its living tomb,
And basks beneath the open heaven.

There, as on some green knoll reclined,
The summer landscape round me glowing,
While gentle ardours fill the mind,
I leave the unquiet world behind,
And hear a voice in every wind
Around my fervid temples blowing.

Thus, through this woodside plant, the mind
Sweeps the vast range of things created,
And longs, and pants, and fails to find
In earth, and ocean, sky, combined,
Those joys, unfailing and refined,
By which its famine may be sated."

11. *O. hircína* (Lizard Orchis).—*Lip* 3-parted, downy; *segments* narrow, middle one very long and curled like a tendril, lateral ones much shorter; *spur* very short. This plant, always very rare on the bushy chalky hills of Kent and Surrey, has not been seen there recently by any botanist. It flowers in July, and is described as much resembling a lizard; its calyx green, spotted with purple, its lip purplish-white and spotted at the base, the middle segment more than an inch long, and the smell of its flowers as most disgusting.



GREEN HABENARIA.
Habenaria viridis

WHITE H.
H. albida

BUTTERFLY ORCHIS
H. bifolia

PLAT BUTTERFLY ORCHIS
H. chlorantha

MAN O
Aceras anthropophora

HUSK O
Herminium monorchis

9. Gymnadénia (Gymnadenia).

1. *Gymnadénia conópsea* (Fragrant Gymnadenia).—*Lip* 3-lobed; *lobes* equal entire, blunt, free from spots; the two *lateral sepals* spreading; the two *lateral petals* converging; *spur* slender, twice as long as the germen. Several of our native Orchids have a pleasant and delicate fragrance; but none in this respect equals the Gymnadenia either in power and sweetness. The scent is almost too much for a room, though delicious when borne on the midsummer breeze from the hundreds of blossoms which sometimes stud the dry grassy plains during June and the two following months. It is especially common in the mountainous parts of Scotland; but it grows, too, on many hill-sides of England, as about Dover, whence we may gather a large and fragrant nosegay of its flowers from meadows, on which they stand in conspicuous beauty by thousands. The flowers are of a deep rose colour, rarely white, and still more rarely spotted with deeper red. It is found mostly on dry soils, often in company with the Pyramidal Orchis; but Mr. Loudon remarks that it grows sometimes with *Epipáctis palústris* on bogs, where the foot can hardly tread. The stem is about a foot high, the leaves narrow, lanceolate, and keeled, and the flowers are arranged on a spike somewhat dense at first, afterwards more scattered.

10. Habenária (Habenaria, Butterfly Orchis).

1. *H. víridis* (Green Habenaria).—*Spur* 2-lobed, very short; *lip* 2-cleft, linear, with an intermediate tooth; *sepals* and *petals* forming a hood; *bracts* much longer than the

flower; *tubers* palmate; *root* perennial. This small Orchis is not uncommon on dry pastures,—a solitary specimen often growing on a spot far from any other, unlike most of our Orchises, which generally grow socially. Its stem is six or eight inches high, the helmet of the flower green, and the lip greenish-brown. The blossoms form a lax spike from June to August, and the lower leaves are egg-shaped and blunt, and the stem from six to twelve inches high. The plant is sometimes called, though with little reason, Frog Orchis.

2. *H. albída* (Small White Habenaria).—*Lip* 3-lobed; *lobes* acute, middle one longest and broadest; *sepals* and *petals* nearly equal, converging; *spur* blunt, shorter than the germen; *root* perennial. This is a smaller and prettier Orchis than the last, bearing a long spike of little yellowish-white fragrant flowers, during June, July, and August. The lower leaves are oblong and blunt, the upper lanceolate and acute. The stem is about six inches high. This Orchis is not unfrequent on mountain pastures.

3. *H. bifólia* (Lesser Butterfly Orchis).—*Spur* twice as long as the germen; *petals* converging, blunt; *lip* linear, entire, blunt; *root-leaves* generally two, elliptical. This, though a singular and lovely flower, would scarcely suggest the idea of a broad-winged butterfly, though it might remind us of a smaller winged insect. The stem, which is slender and angular, is about a foot high, and the loose spike of white or greenish-white blossoms is about four or five inches long, expanding from June to August. The corollas are remarkable for their length of spur, and the strap-shaped lower lip. The two broad

root-leaves are bright green, those of the stem are narrow and lanceolate. The plant is common in moist woods.

4. *H. chlorántha* (Great Butterfly Orchis).—*Spur* twice as long as the germen; *petals* converging, blunt; *lip* linear, entire, blunt; *root-leaves* elliptical, and usually two; *root* perennial. This plant is very similar to the last; and many botanists doubt if it is truly distinct from it. It is both taller and stouter than the preceding, and its flowers much larger and more beautiful, expanding at the same season. Its stem is usually a foot or a foot and a half high; but Mr. F. A. Paley found a specimen measuring two feet, in a wood near Clifton; and we have observed it, in copses about Waldershare in Kent, attaining such luxuriance that its white flowers could be seen by moonlight, growing among bushes and ferns, as we passed the high road by the wood. The spike is sometimes lax, but is in some specimens crowded. It is found occasionally on dry pastures and heaths, but more frequently in moist woods and thickets.

11. Áceras (Man Orchis).

1. *A. anthropóphora* (Green Man Orchis).—*Lip* 3-parted; *segments* linear and very narrow, middle one 2-cleft; *sepals* acute, hooded, including the two small linear blunt petals; *root* perennial, of two egg-shaped knobs. This, though a somewhat local plant, is common in the dry chalky wooded or bushy places in several counties, sometimes growing also on clayey pastures. It bears in June, on a stem about a foot high, a long lax spike of yellowish-green flowers, which have a very sweet odour by day, but which, like several green flowers,

have a stronger scent in the evening, though we cannot describe it as agreeable at that time. The lip of the blossom has its middle lobe deeply cleft, and margined with purplish-brown; and occasionally the lip is crimson, and the green helmet is often marked with lines of this hue. We have often witnessed the disappointment of those who looked for the first time on this plant, and could trace little of that similitude to which it owes its familiar name. On observing it closely, however, one may detect some resemblance to the human figure, with the head enclosed in a casque ; but for that likeness to animated nature which some of the Orchids exhibit, we must, among our British flowers, look to the genus Ophrys.

12. Hermínium (Musk Orchis).

1. *H. Monórchis* (Green Musk Orchis).—*Lip* 3-lobed, middle lip the longest; *sepals* egg-shaped, shorter than the petals; *root-leaves* usually two, lanceolate-oblong, a small leaf on the stem; *root-knobs* far asunder and unequal. This little Orchis bears a crowded slender spike of greenish flowers in June and July. The stem is about five or six inches in height, and very slender. It grows on chalky pastures in the south of England, as on turf between Lyminge and Eltham in Kent.

13. Óphrys (Ophrys).

1. *O. apífera* (Bee Orchis).—*Lip* swollen, 3-cleft, the intermediate lobe recurved at the margin, with a long awl-shaped reflexed appendage in the notch; *petals* oblong, bluntish, downy; *root* perennial. Any one who



1 BEE OPHRYS
Ophrys apifera

2 LATE SPIDER O.
O arachnites.

3 SPIDER O.
O aranifera

4 FLY O
O. muscifera.

5 COMMON LADYS SLIPPER.

even glanced at this pretty wild flower, would discover its likeness to the large velvety bee which buzzes about it in the months of June and July. On many chalky or clayey soils it is not unfrequent, as on some of the chalk downs in Kent, on pastures in the Isle of Wight, and other places. The stem is about a foot high, bearing a few distant flowers. The sepals, which look like delicate wings, are either greenish-white or of a pale or deeper lilac tint; and the little oblong petals are of the same hue; while the lip, which represents the body of the insect, is brown, variegated with yellow, and soft and velvety. The author has found it near Dover with snow-white blossoms, but fears to indicate the spot, lest some ruthless collector should extirpate it. Linnæus named this species *O. insectífera;* and certainly this, the fly, and in a less degree the spider, Orchis bear a resemblance to the insect race. But many foreign orchideous plants exhibit similarities, no less striking, to butterflies, spiders, frogs, and other living creatures. "So various are they in form," says Dr. Lindley, "that there is scarcely a common aphide or insect to which they have not been likened." These singular likenesses have rendered the culture of this tribe of plants extremely interesting, and many most lovely species may be seen in the hot-houses of this country. Some of them cling to surrounding plants and grow upon them, as they would do to the trees in their native forests, festooning them with garlands of flowers; while many, like the air-plant, need only some place of attachment, and fastened only to the wire of the hot-house, bloom at all seasons, well deserving the expressive name given to them by the

South Sea islanders—"Splendid things without a foundation."

2. *O. arachnítes* (Late Spider Orchis).—*Lip* somewhat swollen, with four shallow marginal lobes, and a terminal flat heart-shaped appendage, which is always straight; *sepals* coloured; *petals* angular, downy. This is a rare plant of the chalky downs near Folkestone and Sittingbourne in Kent. The sepals are pinkish, a little tinged with purple, and with a green vein down the middle; the velvet lip is dark purple, variegated with yellow or green, and the appendage of light green.

3. *O. aranífera* (Spider Orchis).—*Lip* swollen, scarcely 3-lobed; *middle lobe* without an appendage, or with a minute point or gland in the notch; *petals* narrow. In one form, the lip is lobed and the petals smooth. In one, sometimes termed *O. fucífera*, the lip has no lobes, but a spreading wavy margin, and the petals are rough. This Orchis is not unfrequent on the chalky and clayey pastures of Kent. Its sepals are green, and its lip of a deep brown hue and hairy, having greenish, or more often dull yellow, hues, frequently resembling the Greek letter Π. It is a low-growing Orchis, rarely half a foot high, the flowers reminding one of spiders, and few in number, often not more than three on a plant. It flowers in April, May, and June.

4. *O. muscífera* (Fly Orchis).—*Lip* oblong, 3-cleft, with a broad pale spot in the centre; *middle lobe* long and 2-cleft; *petals* thread-like; *root* perennial. This common and pretty Orchis grows on grassy hillocks and clay soils in moist places, in many parts of Norfolk, Suffolk, Surrey, Kent, and other counties. Its flowers

are about the size of the common house-fly, though often larger, and its resemblance to that insect is very striking. The green sepals are like wings, and the lateral petals are like the antennæ of insects; while the brownish-purple lip, with a pale blue, somewhat square spot in its centre, resembles the body of the fly. The little flowers, about nine or ten in number, in luxuriant specimens, are scattered over the upper half of a slender stem, about a foot high, and look as if the insects were pausing there to rest on the stalk. Parkinson says of this plant:—"The neather parte of the flie is black, with a list of ashe colour crossing the backe with a show of legges, hanging at it; the naturall flie seemeth so to be in love with it, that you shall seldome come in the heate of the daie but you shall find one sitting close thereon." The author of these pages, however, who has been from childhood much accustomed to watch this flower, has not observed this, though the bees certainly seem attracted by the Bee Orchis. Bishop Mant thus alludes to some of these flowers. Comparing them with the Early Purple Orchis, he says:—

"And few of that most curious race,
Or those that rival them in grace,
Perhaps exceed; the ophrys kind
In the advancing season join'd,
Stamp'd with their insect imagery,
Gnat, fly, and butterfly and bee,
To lure us in pursuit to rove
Through winding coombe, through shady grove."

14. Cypripédium (Our Lady's Slipper).

1. *C. Calcéolus* (Common Lady's Slipper).—*Stem* leafy; *lip* slightly compressed, and shorter than the calyx; *root*

perennial. Those who have ever seen this lovely and rare Orchis, cannot fail to regret that it is not a more common woodland flower. It is the most beautiful of European Orchids, and has a far larger blossom than any other of our native species. This is usually solitary, though two flowers sometimes grow together on the leafy downy stem, which is a foot or a foot and a half high. The sepals are an inch or an inch and a half long, and the petals are narrow, all being of a deep rich brown colour. The swollen lip, about an inch in length, is rich yellow, with a network of darker veins, and elegant slipper-like form. It flowers in May, and grows in some dense woods in Yorkshire and other northern counties, but appears to be almost extinct. It is not only innocuous, but somewhat nutritious; and a decoction of its roots was recommended by Gmelin in cases of epilepsy; but Professor Burnett, remarking on this, says that their influence on the disease "is more than apocryphal." The French call the plant *Soulier de la Vierge*, or *Soulier de Notre Dame;* the Germans, *Venusschul;* and the Portuguese, *Calcado de Nuessa Senhora.* Some very handsome American species are cultivated in this country.

Order LXXXIV. IRIDEÆ.—THE IRIS TRIBE.

Perianth 6-parted; *stamens* 3, rising from the base of the sepals; *ovary* inferior, 3-celled; *style* 1; *stigmas* 3; often petal-like; *capsule* 3-celled, 3-valved; *seeds* numerous. The Order consists of plants, often with very



1 YELLOW WATER IRIS
Iris pseudacorus

STENIG 4
I. foetissima.

OLE NAS TRICHONEMA
Trichonema columnae

PURPLE SPRING CROCUS

5 LEAST SPRING C
C. minimus

6 GOLDEN C
C. aureus

7 SAFFRON C
C. sativus

8 NAMED FLOWERING C

handsome flowers, rising from a spathe or sheath, and having, except in the Crocus, flat sword-shaped sheathing leaves. They are chiefly natives of warm and temperate climates.

1. Íris.—*Perianth* with the three outer divisions longer and reflexed; *stigmas* 3, resembling petals, and covering the stamens. Name from *Iris*, "the rainbow," from the bright hues of the flowers.

2. Trichonéma.—*Perianth* in 6 equal spreading divisions; *tube* shorter than the limb; *stigma* deeply 3-cleft, its lobes 2-cleft, slender. Name from the Greek *thrix*, a hair, and *nema*, a filament.

3. Crócus.—*Perianth* in 6 equal, nearly erect, divisions; *tube* very long; *stigma* 3-cleft, its lobes inversely wedge-shaped. Name from the Greek *crocos*, saffron, and that from *crocé*, a thread.

1. Íris, or Flower de Luce.

1. *I. Pseúd-ácorus* (Yellow Water Iris, or Corn-flag).—*Leaves* sword-shaped; *stem* round; *perianth* beardless, its inner segments shorter and more slender than the stigmas; *root* perennial. The Yellow Water-flag waves its delicate but showy flowers over many a stream, or rears them by its margin. It is among our most beautiful aquatics, growing on a stem sometimes three feet high, amid the leaves which stand up around it like sharp green sword-blades. It is either of a full or pale yellow, flowering from May to August, amid the floral companions that Clare describes as attracting the country rambler:—

"Some went searching by the wood,
Peeping 'neath the weaving thorn,
Where the pouch-lipp'd cuckoo-bud
From its snug retreat was torn;
Where the ragged-robin stood
With its piped stem streak'd with jet,
And the crow-flowers, golden hued,
Careless plenty easier met.

Some with many an anxious pain,
Childish wishes to pursue,
From the pond-head gazed in vain,
On the flag-flower's yellow hue;
Smiling in its safety there,
Sleeping o'er its shadow'd bloom,
While the flood's triumphing care
Crimpled round its guarded home."

During the autumnal months, the stout stems of this plant are made remarkable among the sedges, reed-mosses, and other water-plants, by the long bright-green 3-celled capsules, which droop down among the membranous withered sheaths that once surrounded the blossom. As two, three, or more of the flag-flowers grow on one stem, so there are several of these seed vessels crowded with large seeds, placed in regular rows; and the capsules are so heavy that they would break a less sturdy stem. They may be found growing three together, and more than three inches long. The capsule finally dries into a parchment-like substance; and the hard flattened seeds, looking as if cut out of a piece of deal, fall out into the waters. These seeds, when roasted, are said to be an excellent substitute for coffee; but when their horny covering is removed, they have an acrid taste. The large horizontal root, or root-stalk, contains a farinaceous substance of a most acrid and bitter flavour;

and a portion held between the teeth is said to cure toothache, and it is probably of real service. "But above all," says Ettmuller, "which I have hitherto known, the root of the Iris lutea rubbed upon the tooth that is painful, or the root itself chewed in the mouth, in an instant, as if by a charm, drives away the pain of the teeth arising from what cause soever. He that communicated it to me affirmed that he had tried it forty times, at least, with like success. I myself also have tried it; and a great many others have done the same by my persuasion, and I hardly ever knew it to fail." Those suffering under so troublesome a malady would do well to follow the example with some caution; as, from our experience of its acridity, we should expect that a blister in the mouth would be likely to succeed such a use of the root. These root-stocks have also been used medicinally, but would require care. An ointment was formerly much esteemed, which was made by country people from the flag-flowers; and the old herbalists, who said it was "under the dominion of the sun," distilled the whole herb, and applied it for inflammation of the eyes and eyelids. The root is powerfully astringent, and has been used in making ink; and Gerarde well describes it as showing when cut, "the colour of raw fleshe." Some kind of preparation of the plant is still, we are told, applied in villages as a cosmetic; and this appears to have been of very old use. Mr. Albert Way gives a very interesting and learned note on this plant, in his edition of the Anglo-Latin Dictionary. This work has "Gladone herbe, gladiolus, accolus, iris." "The name Gladwyn," says the commentator, "now denotes

the *Iris fœtiaissima;* but probably the more common species, *I. Pseud-ácorus* may be here intended. In Mr. Drummond's 'Wisdom of Macer,' it is said, 'Gladen is y-clepid in Englishe, *iris* in Latine, for his floure hath a colour like the rainbowe. Take the rootes of this erbe, and kyt hem in round gobetis, and ryfe hem upon a threde, so that none of hem touche other if thou wilt dry hem.' The virtues of this root are numerous, taken with wine, mead, or vinegar; the following is curious as a cosmetic: 'Do take ij parties of this poudre of gladen rotys, and the iij part of the pouder of ellebre, that some men clepen cloffynge, and medele bothe these poudres to-gider in honey. A plaster of this wole purge and clense the face of frekels, also it will resolve the pockys and whelkys of the face.' Elyot renders Xiphium, 'an herbe lyke the blade of a sworde gladen;' it is also called Xyris; and Cotgrave gives 'Glayeul corne sedge, corn gladen, right gladen, gladen, gladen sword grasse.'" Our wild flower is still called Yellow Skeggs, in the north of England.

The roots of some species of Iris are very fragrant, and that of the Florentine Iris is the Sweet Orris root of commerce, so much used in tooth and hair powder, and formerly laid among clothes to keep them from moth. The roots of several kinds, too, are edible. Pallas mentions that those of *I. dichótoma* are eaten in Siberia, and those of *I. edúlis* are common food among the Hottentots. These people call them *Oenkjes;* and as they have, according to Thunberg, no idea of the beginning or ending of a year, the flowering and decay of the bulbous plants are the only signs of their almanacks,

which serve to indicate either the years of their age or the course of time.

2. *I. fœtidíssima* (Stinking Iris).—*Leaves* sword-shaped ; *perianth* beardless, its inner segments about as long as the stigmas ; *root* perennial. This species is not nearly so showy a flower as the Yellow Iris, for its petals are of a dull blue, or, in some rare instances, a dingy yellow. The plant has a singular odour ; and while it is untouched, this is not disagreeable, reminding one of roasted meat; hence in some places it is known as "Roast-beef plant;" but if we break the stem or crush a leaf, its scent becomes extremely unpleasant. This Iris is generally a foot or a foot and a half high ; and though a local plant, is common in the west and south-west of England. It is abundant in the woods and thickets of Devonshire, and grows in several parts of Kent in dry hedges, or, as in the neighbourhood of Hythe, along the cliff coast, and on banks near Dover. It bears its flowers from June to August, and the leaves are so acrid that their juice produces a most burning sensation on the tongue. These leaves, steeped in beer, are used by country people as medicine ; and all parts of the plant were praised by the old herbalists ; though, as one of them observes, as a decoction of the plant "somewhat hurts the stomach," it should not be taken internally without honey. It was supposed to cure all disorders of the liver ; and coughs, colds, and headache were believed to be speedily dismissed by its use ; while gout and other painful diseases were to be relieved by an oil which was prepared with the plant, and termed *Oleum irinum.*

This and other species of Iris were from early times called "fleur de lis," or "flour de luce." Chaucer apparently refers to a white foreign species :—

"His nekke was white as is the flour de lis."

Dr. Turner, in 1568, calls it "flour de lyce;" and Gerarde "flower de luce;" reminding us of Shakspeare's lines:—

"Lilies of all kinds,
The flower-de-luce being one."

Several flowers were called lilies in those days, including both the Iris and the Daffodil; and it is probable that "fleur de luce" was originally "fleur de Louis."

The Iris has an interesting historic interest. Louis the Seventh of France adopted it as the emblem of his shield during the Crusades, and strewed it on the mantle of his son, when he caused him to be consecrated at Rheims. After the battle of Cressy it was united with the arms of England. Gray refers to this :—

"Great Edward with the lilies on his brow,
From haughty Gallia torn ;"

and it remained emblazoned on the arms of this country till, on the union with Ireland, it yielded to the Shamrock. It is still the Lily of France ; and it was from earliest ages considered, in Eastern countries, as a symbol of power. A fleur-de-lis, exactly like that of the emblem of the French monarchy, was found surmounting a sceptre on a monument of highest antiquity at Dendera, in the heart of Egypt. M. Sonnini remarks:—"Herodotus and Strabo relate that the kings of Babylon formerly bore the fleur-de-lis at the extremity of their sceptre. Montfaucon also speaks of that of David, found in the miniature of an engraved manuscript of the

tenth century, which is surmounted by a fleur-de-lis. It is evident that the ornament called the 'lis' was not a symbol peculiar to the crown of France; and it is not surprising that it composed a part of those which were employed in the mysterious representations of antique Egypt, since it was in former times the mark of power with some sovereigns of the country, or of some adjacent sovereignties." The Iris was placed on the brow of the Sphinx; and the ancients regarded the flower as the emblem of eloquence.

The stigma of the Iris flower is not only at some distance from the anther, but being separated from it by a membrane, the pollen could not reach its destination but for the aid of insects. The humble-bee seems the chief operator in effecting this; and in order to get at the nectary, the insect pushes itself in close to the anther, brushes off the pollen with its hairy back, which, as the bee emerges, is shaken on the stigma. The smaller insects perform this part in the lesser species of Iris; but for some of the larger ones, the humble-bee seems the only one strong enough to make its way beneath the leaf-like stigmas to the stamens which they conceal. The seeds of this Iris are very beautiful in winter, when their capsule shrivels and displays them in all the lustre of brilliant scarlet. The seeds are numerous, round, and most powerfully acrid.

The *Iris tuberósa* is often described among British flowers, being found in several parts of Cornwall, and sometimes in abundance, but always too near houses to be regarded as even naturalized. It was formerly often reared in gardens for its medicinal properties, and is

a native of the south of Europe. It had the old name of Snake's-head Iris. It has delicately fragrant flowers, and singular four-edged leaves. Some other species, as well as the American *Sisyrynchium anceps*, which has been found on several spots in Ireland, have also been included in the list of British plants; but they are apparently but of accidental growth in this kingdom.

2. Trichonéma (Trichonema).

1. *T. Colúmnæ* (Columna's Trichonema).—*Stalk* single-flowered, slightly drooping; *leaves* thread-like, flattened, furrowed, and bending backwards; *spathe* longer than the tube of the corolla; *stigmas* 2-cleft; *root* perennial. This is a rare plant, growing only on a sandy pasture called the Warren, at Dawlish, and in the grassy hillocks of Jersey and Guernsey. It has a bulbous root, a stem about four inches high, and pale purple or violet-coloured flowers, expanding in March and April. It is in some respects similar to the Iris, in some rather resembling the Croeus; and Dawlish is thought to be probably its most northern locality, as it is common in southern Europe.

3. Crócus (Croeus).

1. *C. vérnus* (Purple Spring Crocus).—*Leaves* appearing with the flowers; *spathe* simple; *throat of the corolla* fringed; *stigmas* shortly 3-cleft; *bulb* perennial and clothed with entangling fibres. This beautiful Purple Croeus is very abundant about Nottingham, being in early spring most ornamental to the grassy meadows. It is also found at Mendham in Suffolk. It has now been so long naturalized, that it is regarded as one of

our wild flowers, but it is not strictly indigenous. It is said to have been introduced, at Nottingham, some centuries since, by the Dutch. It now also empurples several meadows near Ludlow in Shropshire; but these are believed to be the site of some old gardens. It is the *Safran printanier* of the French gardens.

2. *C. mínimus* (Least Purple Crocus).—*Flower* solitary, appearing before the leaves; *spathe* double; *stigma* erect, longer than the stamens; *bulb* with a membranous coat. This species is found on the site of an old garden in the park at Barton in Suffolk, and is not truly wild. The flowers are of pale lilac, striped with yellow and purple. Its bulb is remarkable for the reticulated fibres, and the plant is sometimes called Netted Crocus.

3. *C. aúreus* (Golden Crocus).—*Leaves* and *flowers* appearing at the same time; *spathe* simple; *stigma* shorter than the stamens; *segments of the corolla* spreading and bending backward; *bulb* coated with compact fibres. This beautiful little crocus is found with the last species, and, like it, is the outcast of gardens. It flowers in March, its leaves appearing at the same time. Several beautiful species were, many centuries since, brought into this kingdom from Greece and the countries of the south of Europe, where, as Homer wrote—

"The flaming crocus made the mountain glow."

Recent writers from the Crimea mention the rich Golden Crocuses so abundant there. A correspondent, writing from before Sebastopol, remarks that numbers of beautiful plants grow there in profusion, grouped in masses which are very striking. He tells of a hundred acres

covered with poppies and larkspurs, the latter five feet high; of acres of yellow Centaurea, and of profusion of the Viper's Bugloss; but he adds, that none of them equal in beauty the carpet of Crocuses in the spring.

4. *C. sativus* (Saffron Crocus).—*Flowers* appearing before the leaves; *spathe* double; *stigma* 3-cleft, hanging out of the flower; *bulb* clothed with slender fibres. This beautiful purple Crocus differs from all the preceding species, in having aromatic stigmas which have a bitter flavour. These deep orange-coloured stigmas, when dried, constitute the saffron so largely used in ancient cookery, and still so favourite a carminative in Eastern lands. The Crocus producing it can hardly be called a naturalized, and is certainly not a truly wild flower of Britain; and it occurs chiefly in the meadows about Saffron Walden in Essex. This town received its name from the culture there of this plant. It is believed to have been introduced to Walden in the time of Edward III.; and to this day it is planted in the fields of the neighbourhood, though far less extensively than in former times. In Norden's "Description of Essex," which was dedicated to Cecil, Lord Burleigh, and which has lately been published by the Camden Society, we find the author remarking: "About the town of Walden groweth great stores of saffron, whose nature in yielding her fruit is verie strange, and bindeth the labourer to great travaile and dilligence; and yet, at length, yealdeth no small advantage to recomforte him agayne." He adds, that the "towne standeth muche upon saffron, whereof much might be spoken concerning the secrets of the nature thereof." In the present time, saffron is in this country

used chiefly as a colouring agent, though it is one of the plants prescribed by the Homœopathic physician ; but in the sixteenth and seventeenth centuries it was considered a remedy for innumerable complaints. Lord Bacon told how the syrups of dried roses, saffron, and apples were useful to "procure quiet sleep," and recommends that "some pills, or a small draught of these things, should be used familiarly." "It is," says an old herbalist, referring to saffron, "an herb of the sun, and under the Lion; and therefore you need not demand the reason why it strengthens the heart so exceedingly. Let not above ten grains be given at a time ; for the sun, which is the fountain of light, may dazzle the eyes and make them blind ; a cordial being taken in an inordinate quantity, hurts the heart instead of healing it." The old physician was apparently right; for saffron has narcotic properties, when taken too largely, and is said to blister the skin and to cause headache, blindness, and delirium. Dr. Hamilton quotes Borellus as affirming that headache and debility were produced by remaining some time in a room where there was much saffron ; other medical writers say that it inclines persons to apoplexy; and a German medical writer records an instance in which the vapour of saffron proved fatal to a man who inhaled it. It is still a drug in high repute in Asiatic countries ; and its Arabic name, *Z'afaran*, and the Moorish terms, *Azafran* and *Safra*, seem to point to its Eastern origin ; while it is called by very similar names throughout Europe. Old tradition tells that a pilgrim, wishing to benefit his native country, brought the root hither, concealed in the hollow of his palmer's

staff; "for if," says Hakluyt, "he had been taken, by the law of the country from whence he came, he had died for the fact."

We find saffron referred to in the Song of Solomon as a valuable product; and a dish called by Apicius, Juscellum, and by our Saxon ancestors Jusselle, is said by Mr. Albert Way to have been a compound of eggs and grated bread with saffron and sage. In ancient Greece and Rome, as in later years in this land, it appeared continually in the dishes of luxury. In the "Forme of Cury," of the time of Richard III., in the "Northumberland Household Book," and other old records, it receives mention. Shakspeare tells of "saffron to colour the warden pies;" and many a pen of those times describes its uses in "Lent soups," sauces, and dishes; while one says, "without saffron we cannot have well-cooked peas." The oldest work on diet, which has been ascribed to Apicius, represents, according to Beckmann, that saffron was employed as a perfume; and modern travellers describe it as still so used in the East.

Saffron is necessarily a costly drug; for as the stigma only of the Crocus should be used in making it, great labour is incurred. It is often adulterated with the florets of the safflower and the garden marigold; but these are wanting in the aromatic and stimulant properties, as well as in the colouring matter of the true saffron; this last being known to chemists as a peculiar proximate principle, called polychroite. The Crocus tribe are all liable to the destruction of their roots by a parasitic fungus, termed Death-mould, or in France,

Mort de Safran. In that country whole fields of the Crocus are destroyed by it. The English Saffron is more valued than that of foreign growth.

5. *C. nudiflórus* (Naked-flowering Crocus).—*Flowers* appearing before the leaves; *spathe* simple; *stigma* erect, within the flower, and in three deep slender divisions; *bulb* with a membranous coat. This Crocus grows in a large meadow near Nottingham Castle, about Warwick, Warrington, Halifax, and other places, but is not truly wild. It bears purple flowers during September and October. The whole of the Crocus genus have their seed-vessels, in the early stage, concealed beneath the ground, at the base of the long tubular stalk-like calyx-tube; but on the withering of the flowers, the true stalk rises, and brings them to the sun and air to ripen.

Order LXXXV. AMARYLLIDEÆ—AMARYLLIS TRIBE.

Perianth 6-parted; *stamens* six, arising from the base of the segments, and sometimes united below by their filaments; *ovary* inferior, 3-celled; *style* one; *stigma* 3-lobed; *fruit*, a many-seeded capsule, or a berry containing from one to three seeds. This Order differs chiefly from Irideæ in its anthers, which burst inwards, whereas those of that Order open outwardly. It consists mostly of herbaceous plants, with bulbous roots, leaves arising from the root, and handsome blossoms.

1. Narcíssus (Daffodil).—*Perianth* tubular at the

base, spreading at the top, and cut into six segments, with a cup-shaped or bell-shaped crown or nectary, within which are the stamens; *flowers* from a spathe. Named from the youth Narcissus of the ancient poets.

2. Galánthus (Snowdrop).—*Perianth* of six pieces, three outer ones spreading; three inner ones smaller, erect, and notched; *flowers* from a spathe. Name from the Greek *gala*, milk, and *anthos*, a flower.

3. Leucójum (Snowflake).—*Perianth* bell-shaped, of six equal pieces, somewhat thickened at the point; *flowers* from a spathe. Name from *lucæ*, white, and *ion*, a violet.

Narcíssus (Narcissus).

1. *N. Pseúdo-Narcíssus* (Common Daffodil).—*Spathe* single-flowered; *nectary* bell-shaped, erect, curled and notched at the margin, as long as the egg-shaped spreading outer segments; *leaves* linear and blunt; *stalk* two-edged; *root* perennial. It is in moist woods and thickets, chiefly, that we must look for the Daffodil; and though in Scotland it is rare, it is not uncommon in some parts of England. Sometimes, too, it nods above the grass of the meadow or orchard, or in the hedge; but it is not often in its wild state that we see it in such numbers as Wordsworth describes:—

> "I wander'd, lonely as a cloud
> That floats on high o'er vales and hills,
> When, all at once, I saw a crowd,
> A host of golden daffodils,
> Beside the lake beneath the trees,
> Fluttering and dancing in the breeze.



1 COMMON DAFFODIL
Narcissus pseudo narcissus
2 THE POETS NARCISSUS
3 PALE N.
N biflorus
4 SNOWDROP

Continuous as the stars that shine
And twinkle in the milky way,
They stretch'd in never-ending line
Along the margin of a bay;
Ten thousand saw I at a glance,
Tossing their heads in sprightly dance."

The wild Daffodil is like that which is found in every garden during spring, except that its yellow hue is somewhat paler, and its blossom single. Like that flower, however, it deserves the name of Lent-lily; for it, too—

"Comes,
Before the swallow dares,
And takes the winds of March with beauty."

The Anglo-Saxons called the plant "affadylle," or "afrodille;" and several kinds were early cultivated in gardens. Gerarde tells of various species, known as the Nonpareil Daffodil, the Primrose-peerlesse, King's-chalice, Camel's-neck, and Longshanks. The double-yellow dark one, from his friend, Robinus of Paris, he says, he introduced into his garden; and speaking of the "Spanish Daffodil," he adds, "it doth likewise decke up our London gardens, where they encrease infinitely." Our common flower was called by various poets daffy-down-dilly,—a name yet retained in country places. In Hertfordshire and other counties, an old custom still exists of gathering these flowers and placing them on sticks; and these bouquets are carried by children into towns, who sing the old Norfolk ditty—

"Daffy-down-dilly is coming to town," &c.

and term this custom "going a-daffying."

Though the Daffodil gladdens us by its brightness and early flowering, yet it is not a favourite with modern as with olden poets; and would not, at any rate, be used as a symbol of feminine grace, as it was by so many old writers. Michael Drayton has a poem called the "Shepherd's Daffadille:"—

> "Though with my flower thou didst not meet,
> Nor news of her doth bring;
> Yet is my daffadille more sweete
> Than that by yonder spring.
>
> I saw a shepherd, that doth keepe
> In yonder field of lilies,
> Was making, as he fed his sheep,
> A wreath of daffadilles."

Spenser describes a lady as thus attired:—

> "Upon her head a crimson coronet,
> With daffadils and damaske roses set."

And the maidens are represented as—

> "Gathering sweet daffadillies to have made
> Gay girlonds from the sun their foreheads fair to shade."

When Milton bids—

> "The daffadillies fill their cups with tears,
> To strew the laureate herse where Lycid lies,"

there seems a meetness in the figure; but we fear that neither the comparisons to daffodils, nor the gift of the wreath made of their blossoms, would suit modern feminine taste. The scent of the flower is unpleasant, and would doubtless cause headache, in a close apartment. All the species of Narcissus have an odour more or less noxious, and which, in its mildest effect, produces drowsi-

ness. The ancients were well aware of their narcotic properties; and as old Gerarde says, "Sophocles nameth the Narcissi the garland of the infernal gods, because they that are departed and dulled with death should worthily be crowned with a dulling flower." Our Common Daffodil possesses a poisonous juice, but it has been used on the Continent medicinally.

2. *N. poéticus* (Poet's Narcissus.)—*Spathe* usually single-flowered; *nectary* very short, and notched at the edge; *leaves* keeled; *roots* perennial. This beautiful species, the Primrose-peerless of old writers, is well known in our gardens, and is often, when found in a wild place, but an outcast from cultivated ground. It is said, however, to be wild in some sandy fields in Norfolk and Kent; but even here it can scarcely be said to be more than naturalized. It blooms in April and May, and has a flower cut into broad white segments, and a short crown with a dark purple or crimson edge. It is known throughout Europe as the *Narcisse, Narcis, Narzizo,* or by some very similar name, and is believed to be the Narcissus of the classic writers. The ancients used it as a funeral flower, and also consecrated it to the Furies, who were fancied to stupify persons before punishing them. The bulbs of this, and some other kinds, contain a farinaceous substance of so emetic a property, that the older herbalists called them *bulbi vomitarii.* An extract from this plant is still given, in slight doses, for hooping-cough. The perfume of the flower is not so powerful as to be unpleasant. Lobel notices its culture in this country in 1570. The Chinese use it in the religious ceremonies customary at the commencement of

the year; and the bulbs are sent from Canton to other places, just as they are about to blossom, and are planted in pots for this purpose. The flower is much prized in the East, is worn in the head-dress of the women of Aleppo, and placed in the vase which adorns the table at Arabian festivals. It grows wild in France, Switzerland, and Southern Europe. Keats alludes, in sweet English verse, to the ancient legend of the metamorphosis of the youth Narcissus :—

> "What first inspired a bard of old to sing
> Narcissus pining in th' untasted spring?
> In some delicious ramble he had found
> A little space with boughs all woven round,
> And, in the midst of all, a clearer pool
> Than e'er reflected in its pleasant cool,
> The blue sky, here and there serenely peeping,
> Through tendril wreaths fantastically creeping;
> And on the bank a lovely flower he spied,
> A meek and forlorn flower, with nought of pride,
> Drooping its beauty o'er the watery clearness
> To woo its own sad image into nearness.
> Deaf to light Zephyrus, it would not move,
> But still would seem to droop, to pine, to love:
> So while the poet stood in this sweet spot,
> Some fainter gleamings o'er his fancy shot;
> Nor was it long ere he had told his tale
> Of young Narcissus and sad Echo's bale."

3. *N. biflórus* (Pale Narcissus).—*Spathe* 2-flowered; *nectary* very short, and notched at the edge; *leaves* keeled; *root* perennial. This species, which is plentiful about Dublin, and occurs on sandy fields in many places in the south of England, is, however, but a naturalized plant. It flowers in May and June, and has smaller and less fragrant blossoms than the last species; they are

of a delicate yellow, and the short nectary is without the crimson edge.

2. Galánthus (Snowdrop).

1. *G. nivális* (Common Snowdrop).—*Flowers* drooping; *leaves* keeled, linear, and glaucous; *root* perennial. There are many parts of the kingdom where this pretty flower grows without culture, in thickets, lanes, and orchards; evidently, in some, the outcasts of gardens, but in others apparently wild. Sometimes, very early in the year, its snow-white flowers appear among the crackling leaves of winter; or even maintain the propriety of the French name, *Perce-neige*, by uplifting themselves through a mantle of snow.

> "While still the cold north-east ungenial lowers,
> And scarce the hazel in the leafless copse,
> Or sallows show their downy powdered flowers,
> The grass is spangled with its silver drops."

It was probably introduced into this country by the monks, and was deemed by them an emblem of feminine purity—one of its old names being "Fair Maid of February." Our earliest writers upon plants do not mention it as a wild flower. Gerarde says—"These plants doe growe wilde in Italie, and the places adjacent; notwithstanding, our London gardens have taken possession of them manie yeares past." Its old name was Bulbous Violet. The Italians call it *Pianterella*, and the German name of *Schneegloechen* is not inappropriate. It is general in most European countries, and Dr. E. D. Clarke saw it on Mount Helicon. Its inner segments are

greenish, and the snow itself is not whiter than its outer ones.

3. Leucójum (Snowflake).

1. *L. æstívum* (Summer Snowflake).—*Spathe* with several flowers; *leaves* linear, keeled; *root* perennial. Although this bulbous plant grows in moist meadows, in some counties, as in Kent, it was probably brought thither long since from the woods of Germany and Italy, where it is a common flower. It is taller than the Snowdrop, though with much of its general appearance, having white flowers, drooping, and tipped with green. The stalk is usually rather more than two feet high, and is two-edged. It has not the nectary so ornamental to the Snowdrop, but has the advantage of a delicious fragrance, and a larger blossom. It flowers in May, and is common in gardens. The French call it *Nivéole;* the Germans, *Weisse veilchen;* the Dutch, *Sydeloos;* and the Italians, *Leucoio.*

Order LXXXVI. DIOSCOREACEÆ—YAM TRIBE.

Stamens and *pistils* on different plants; *perianth* 6-cleft; *stamens* 6, arising from the base of the perianth; *ovary* inferior, 3-celled; *style* deeply 3-cleft; *fruit*, a dry, flat capsule, or, as in our only British genus, the Black Bryony, a berry. This Order consists chiefly of twining tropical shrubs. It is less distinctly characterized as one of the Monocotyledonous Order than most, by



1 BLACK BRYONY
Tamus communis
2 EDGE PARSLEY
Petroselinum hortense
3 COMMON ASPARAGUS
Asparagus officinalis
4 BUTCHER'S BROOM
Ruscus aculeatus

its leaves, for these have distinct stalks and netted veins.

1. TÁMUS (Black Bryony).—*Perianth* single, deeply 6-cleft; *stigmas* 3; *berry* 3-celled. Name, supposed to be the *Uva Taminia* of Pliny.

1. TÁMUS (Black Bryony).

1. *T. communis* (Common Bryony).—*Leaves* heart-shaped, pointed, glossy; *stems* climbing; *root* perennial We have not many climbers in our native woodlands; and the lovers of the picturesque would be sorry to spare from them the graceful wreaths of the Black Bryony. Its long leafy garlands entwine the boughs; and from among the large shining leaves, the long-stalked racemes of greenish-yellow flowers hang down from May to July. These have little beauty when compared to the handsome foliage which in autumn becomes tinged with purple; but when the woodland flowers have perished, and winter winds are sweeping down the yellow leaves, the dark, smooth, egg-shaped berries of the plant are very conspicuous in their scarlet hue, and very ornamental. The young shoots of this plant are said by Professor Burnett to have a mild and agreeable flavour, and to form a good substitute for Asparagus. This plant, however, possesses a poisonous principle, both in its root and berries; and as its fully-developed leaves may also be unwholesome, the Common Burdock might prove a safer substitute. But Professor Burnett is a high authority on the properties of plants; and he adds that the Moors boil the shoots, and eat them with vinegar and salt.

The Bryony has a very old reputation for the remedial virtues of its large root, which is full of a starchy substance, mingled with a bitter acrid matter, which is noxious till dissipated by heat and repeated washings, when it becomes like that of the Arum, wholesome and nutritive. A number of blackish tumours, possessing a larger amount of the acrid principle, grow on the root; and these should previously be removed, if the root be prepared for food. It is these tubers especially, however, which were valued by the old physicians for stimulating plasters, being crushed in a mortar for this purpose. Mrs. Moodie, who remarks of the Canadian Indians, that they are very skilful in the treatment of wounds and the cure of diseases by means of various plants, says that they make a common salve of the roots of this Bryony. The French call the plant *Tamier;* the Germans, *Schwarzwurzel;* the Dutch, *Vrouwenzegel*; the Italians, *Briona nera.*

Order LXXXVII. TRILLIACEÆ.—HERB PARIS TRIBE.

Perianth 6—10 parted, in 2 rows, outer row or calyx green, inner green or coloured; *stamens* 6—10; *anthers* very long, their cells one on each side of the filament; *ovary* superior, with 3—5 cells, and as many styles; *fruit*, a 3—5 celled berry; *seeds* numerous. This is a small Order of Herbaceous plants, with tuberous roots and whorled leaves, which have netted veins, but the leaves

are not jointed to the stem. The properties of the species are acrid and narcotic.

1. Páris.—*Perianth* of 8—10 narrow spreading divisions, inner ones slightly coloured; *stamens* 8—10. Name from the Latin *par, paris,* equal, on account of the regularity of leaves and flowers.

1. Páris (Herb Paris).

1. *P. quadrifólia* (Herb Paris).—*Leaves* egg-shaped, pointed, four or five in a whorl; *flower* single, terminal; *root* perennial. This very singular plant has a stem about a foot high, which, in May, has near its summit four large broad leaves with distinct veins. From the centre of these arises a green flower on a footstalk, about two inches long. The four outer sepals are green, the four inner ones often more of a greenish-yellow; the stamens are usually eight in number, and the 4-celled pistil is crowned by four stigmas. This is the ordinary state of the plant. But the singular circumstance that it consists of four or twice that number of parts, is not quite invariable, for different specimens have been found exhibiting three or five leaves, or, in rare instances, eight, as well as having but three outer sepals. The most common variation is in cases of five leaves; and in those rare instances of the Herb Paris with three leaves only, it has usually been found without inflorescence.

The Herb Paris occurs in moist shady woods, in many parts of England and Scotland. It has several country names, as One-berry, and True-love. The French call it *Parisette, Raisin de Renard,* and *Etrangle Loup;*

the Germans, *Einbeere;* the Dutch, *Wolfsberie;* and the Italians, *Uva di Volpe.* Parkinson says that the leaves applied outwardly repress tumours and inflammation, and the Russian physicians prescribe the berries as a medicine for disorders of the brain. Every part of the plant contains a poisonous principle, which is strongest in the berries. Gesner remarked that these proved fatal to poultry. This botanist, among his various experiments on plants, swallowed a drachm of the Herb Paris in wine, and the dose was succeeded by copious perspiration and dryness of the throat. When taken in large quantity, the effects of this herb are now well known to be convulsions and delirium. Dr. Hamilton, in his "Flora Homœopathica," says that coffee is an antidote to the poison of an overdose. The homœopathists use every part of the plant in their infinitesimal doses, as a remedy for rheumatism, cough, and bronchitis. The *Paris polyphýlla* of Nepaul is a far more deadly poison.

Order LXXXVIII. LILIACEÆ.—THE LILIACEOUS TRIBE.

Flowers usually perfect; *sepals* 6, petal-like, distinct or united, and forming a tube; *stamens* 6, inserted upon the perianth; *anthers* opening inward; *ovary* superior, 3-celled, many-seeded; *style* 1; *stigma* simple or 3-lobed; *capsule* 3-celled, 3-valved, oblong; *seeds* numerous. The Order consists of herbs, shrubs, and trees; the greater

number being beautiful flowers with bulbous roots, and leaves with veins running from the base to the point, mostly narrow, and never jointed with the stem. In a few instances, the flowers are green and inconspicuous, and the roots are also sometimes fibrous. Many species contain a bitter juice; and several, like the Aloe and Squill, yield important medicines; while the New Zealand Flax, *Phórmium ténax*, furnishes, in the tough fibre of its leaves, a substitute for hemp and flax.

Group I. Asparágeæ (Asparagus Group).

Roots never bulbous; fruit, a berry.

1. Aspáragus.—*Perianth* deeply 6-cleft, bell-shaped; *stamens* distinct. Name from the Greek *asparagos*.

2. Rúscus (Butcher's-Broom).—*Perianth* deeply 6-cleft, spreading; *stamens* and *pistils* on different plants; *filaments* connected at the base; *style* surrounded by a nectary. Name said by Sir W. Hooker to have been anciently *Bruscus*, from *Bruskelen*, in Celtic, Box-holly.

3. Convallária (Lily of the Valley).—*Perianth* 6-cleft, bell-shaped; *stamens* 6, distinct, inserted at the base of the perianth; *stigma* 1. Name from the Latin *convallis*, a valley, from the usual place of growth of some of the species.

4. Polygonátum (Solomon's Seal).—*Perianth* cylindrical, shortly 6-cleft, with erect segments; *stamens* 6, distinct, inserted on the middle of the tube of the perianth; *stigma* 1.

GROUP II. ANTHERÍCEÆ (the Spider-wort Group).

Root not bulbous; fruit, a dry capsule.

5. SIMÉTHIS.—*Perianth* 6-parted; *stamens* 6, distinct; *filaments* bearded. Name from the Sicilian nymph, Simethis.

GROUP III. SCÍLLEÆ (the Squill Group).

Root bulbous; fruit, a capsule; flower-stalk leafless.

6 ÁGRAPHIS (Blue-bell).—*Perianth* deeply 6-cleft, bell-shaped, with segments turning backwards; *stamens* 6, inserted below the middle of the perianth. Name from the Greek *a*, not, and *grapho*, to write, because without any marks on the leaf resembling written characters.

7. MUSCA'RI (Grape Hyacinth).—*Perianth* inferior, almost globose, contracted at the mouth, 6-toothed. Named from the Greek *muschos*, musk, from the odour of some of the species.

8. ÁLLIUM (Garlic).—*Perianth* of 6 spreading pieces; *flowers* on an umbel, having at the base a 2-leaved sheath. Name, the Latin name of the plant.

9. SCÍLLA (Squill).—*Perianth* of 6 spreading pieces; *flowers* not arising from a sheath, forming a cluster, and falling off as the seed ripens. Name from *scullo*, to injure.

10. ORNITHÓGALUM (Star of Bethlehem).—*Perianth* of 6 spreading pieces, which do not fall off, without a sheath, and growing in clusters on a leafless stalk. Name from the Greek *ornis*, a bird, and *gala*, milk.

Group IV. Tulípeæ (the Tulip Group).

Root bulbous; fruit, a dry capsule.

11. Gágea.—*Perianth* of 6 pieces, spreading, without a nectary; *anthers* erect, attached to the filaments by their bases; *style* conspicuous. Named in honour of Sir Thomas Gage.

12. Llóydia.—*Perianth* of 6 nearly equal spreading pieces, not falling off; *anthers* erect; *flower* solitary, few, or somewhat clustered. Named in honour of Mr. Edward Llhwyd, who first discovered this to be a British plant.

13. Túlipa (Tulip).—*Perianth* bell-shaped, of 6 pieces, without a nectary, not falling off; *anthers* erect; *stigmas* without styles; *flowers* solitary, rarely 2 on a stem. Name from *toliban*, the Persian word for a turban.

14. Fritillária (Fritillary).—*Perianth* bell-shaped, of 6 pieces, with a nectary at the base of each; *anthers* attached above their bases; *style* 3-cleft at the summit. Name from the Latin *fritillus*, a dice-box, from the chequered markings of the flower.

1. Aspáragus (Asparagus).

1. *A. officinális* (Common Asparagus).—*Stem* herbaceous, mostly erect, without spines, branched; *leaves* in bundles, bristly, flexible; *root* creeping and perennial. This is a rare wild plant; though the origin of the vegetable so prized at our tables would scarcely be thought likely to prove of any worth by him who should find it in its native condition. It grows on some parts of our south-western coast, where, though it rarely attains the dimensions of cultivated specimens, it exhibits

all the distinctive features which characterise it in our gardens. When growing in exposed situations, it does not exceed a foot in height; but in sheltered moist ravines it grows luxuriantly, and forms a thicket from two to three feet high. The young shoots, in their wild state, differ little from the asparagus of the table, except that their peculiar flavour is too powerful. The hair-like leaves grow in large bundles, of a rich full green colour, forming graceful green masses, and the small greenish drooping flowers, which expand from June to August, are succeeded by bright red berries containing hard black seeds. The plant grows chiefly on gravelly or rocky spots near the sea. It has been found on the coasts of Dorsetshire and Somersetshire; and at Kynance Cove in Cornwall, a little island has received the name of Asparagus Island, on account of its growth there. It occurs, though rarely, on Seaton Links near Edinburgh, and is common on the sea-shores of several European countries. On the dry sandy steppes of Poland and the south of Russia, it grows in great abundance on the partially saline soil, giving to many spots their characteristic feature of vegetation.

The Asparagus was, by our fathers, called Sperage and Sparrow-grass. The latter name, though used now only by the uneducated, was formerly in use by the best writers in the English language, as Camden, and is, no doubt, a corruption of the Greek *asparagos*. The Continental names seem nearly related to it. Thus the French call the plant *Asperge;* the Germans, *Spargel;* the Dutch, *Aspergie;* the Italians, *Sparragio*; the Spaniards, *Esparrago*. The word was originally derived from the Greek

"to tear," from the prickly nature of some species. The *A. hórridus* is beset with thorny spines, three or four inches long; but its young shoots form a valuable vegetable to the people of Barbary.

Our cultivated Asparagus is one of the oldest and most esteemed culinary vegetables, was a favourite dish with Cato, and praised by Columella and Pliny. The latter mentions a kind which grew on the sandy soils near Ravenna, three shoots of which would weigh a pound; and from other writers, we learn that the Asparagus attained a height of from twelve to twenty feet. Under the Romans, stems of this plant were procured of three pounds weight—"heavy enough," says Dr. Doran, "to knock down a slave in waiting;" while "Do that as quickly as you would asparagus," is a proverb descended from Augustus. The Greeks ate their asparagus with equal zest, but it was of smaller dimensions; and "the doctors of that day," says our author, "denounced asparagus as injurious to the sight; but they told also that a slice or two of boiled pumpkin would re-invigorate it." Pliny said that Nature intended Asparagus to grow wild that all might eat thereof.

In the old gardens of our own country the Asparagus was much valued. "It is," says Parkinson, "a principle delectable sallet herb, whose young shootes, when they are a good handfull high above the earth, are cut an inch within the ground, which being boyled, are eaten, with a little vinegar and butter, with great delight." The seeds removed from the berries, after drying, are said to make a good substitute for coffee, and to be scarcely less highly-flavoured than that of the Arabian

berry; while a paper-maker of Ghent stated, within the last twenty years, that an excellent paper might be made of the refuse of the vegetable, and might, with still greater economy, be made by mingling a pulp of Asparagus fibre with that obtained from Beet-root.

2. Rúscus (Butcher's Broom).

1. *R. aculeátus* (Common Butcher's Broom).—*Stem* green, erect, much branched; *leaves* numerous, egg-shaped, pointed, bearing the small solitary flower on their upper surface; *root* perennial. This, which is the only British shrub among Endogenous plants, is abundant in bushy heaths and woods in the south of England, where the soil is of sand or gravel; but it is not a common plant in all parts of the kingdom; and though seen occasionally in Scotland, it is not believed to be truly wild there. It is a rigid shrub, which seems as if winter's roughest wind would hardly bend it; and its flat, dark, stiff evergreen leaves have little succulence. During March and April the leaves have a very singular appearance, from having a little greenish flower growing from about the middle of the upper surface, on a stalk not apparent, because embedded in the substance of the myrtle-green leaf. We have no other native plant flowering in this manner; but owing to the small size of the blossom, it is often overlooked. Bishop Mant says of it:—

> "Mid barren heaths the butcher's broom,
> On thorn-tipt leaves, its lovely bloom,
> Infixes, when the central eye
> Shoots to a purple nectary;
> Bright 'mid the greenish petals shows,
> And dark green leaf whereon it blows."

By the end of August or the beginning of September, the shrub may attract more notice by the round scarlet berries, each as large as a small cherry, seated on the leaves; though, as far as the observation of the author has extended, these fruits are very uncertain, in one winter being in profusion, while, in the next season, scarce one is to be found in the same wood where they glistened so brightly in the last year. The boughs, when gay with these berries, form a very pretty addition to the bouquet of Christmas; at which season, too, we often see them ornamenting the butchers' shops, or those in which bacon and cheese are sold, for they form an impenetrable and prickly hedge through which the mice cannot travel. The name of Butcher's Broom originated in the habit of sweeping the shops where meat is kept, by a broom made of its boughs; and, in Italy, branches of the plant tied together are commonly used for sweeping houses. The shrub has, besides, several old familiar names, as Ruscus, Bruscus, Kneeholme, Kneeholly, Kneehulver, Pettigree, and Jews' Myrtle; and the French call it *Fragon piquant*, *Buis-épineux* (spiny box), and also *Petit-houx* (little holly); and the name of Bruscus is said to be derived from *Beus*, box, and *Kelen*, holly, in Celtic; that is Box-holly. The berries have a sweet flavour, and each contains two orange-coloured seeds. These fruits were in former times, crushed and applied to broken bones, and the thick white roots were boiled with honey or sugar, and believed to be a good medicine for pulmonary disease.

During the winter months, we may often see large

boughs of this shrub exhibiting nothing but the gauzy network which constitutes the framework of the leaves, the whole branch being a mass of skeletons from which the green part has died away. We know of no native plant which exhibits this woody fibre so commonly as the Butcher's Broom; and in days when plant skeletons were much prized, this shrub would probably be much sought by those who made them. We may still see, in museums and elsewhere, collections of these skeletons, exhibiting the arrangement of the fibre in leaves, roots, and even in the delicate corollas of plants. They have mostly been made by a somewhat tedious process, by macerating in water, and then removing, with some delicate implement, the pulpy decomposed portion. They are afterwards washed and bleached by some chemical preparation, and, when properly cleaned, will last for many years.

The art of making these skeletons is little valued now, because these web-like vessels have been so often examined with the microscope, and pictured by the engraver, that we can readily make ourselves acquainted with their structure; but the older botanists paid much attention to it, and as early as 1645 accounts of the process were published. Several works afterwards appeared on the same subject; and finally a folio book was presented to the world, containing engravings of the fibres of the Ivy, Butcher's Broom, Orange, Pear, Maple, Holly, White-thorn, &c. Conrad Gesner and Du Hamel are among the celebrated botanists who devoted much time to the preparation of these vegetable fibres.



1 LILY OF THE VALLEY
Convallaria majalis

2 NARROW LEAVED SOLOMONS SEAL
Polygonatum verticillatum

3 COMMON S S
P multiflorum

4 ANGULAR S S
P officinale

3. Convallária (Lily of the Valley).

1. *C. majális* (Sweet-scented Lily of the Valley).—*Leaves* 2, egg-shaped, lanceolate, springing from the root; *flowers* bell-shaped, with segments bending back, drooping, in a raceme; *root* perennial. Among the flowers pre-eminently favoured by poets stands the delicate Lily of the Valley; and writers, both of olden and modern days, agree in regarding it as an emblem of modesty. The unsullied purity of the snowy blossom, which, while young, is enfolded in the two large green glossy leaves that through its whole growth serve as a mantle to it; and its lowly home in the shady glen, where to be seen it must be looked for, have served to invest it with poetic interest. The olden lovers of flowers, the monks, and nuns, and simplers of past times, looked, too, on the plant with loving eye, believing that it was the same to which our blessed Saviour pointed his saddened disciples, when he bade them "Consider the lilies of the field." But modern travel and modern science have swept away the pleasing illusion. Neither in field nor grove of the Holy Land may the pilgrim find this lovely Lily, though many of those plants which the botanist terms liliaceous grow there, and many a flower which men in olden times would have called a lily. The beautiful little yellow Amaryllis (*Oporánthus lúteus*), which gleams by thousands among the grass; the tulip which glares in the meadows of Galilee; the crown imperial, narcissus, scarlet amaryllis, and many another lily-like flower, have been assigned as that to which our Lord pointed; but Dr.

Bowring's remarks, made some years since in a communication to the "Gardener's Chronicle," seem to indicate, with somewhat more of certainty, the Martagon Lily (*Lílium Chalcedónicum*) as the lily of the New Testament. Dr. Bowring says, "I cannot describe to you with accuracy the lily of Palestine. I heard it called by the title of *Lília Syríaca*. Its colour is brilliant red; its size about half that of the common Tiger-lily. The White-lily I do not remember to have seen in any part of Syria. It was in April and May that I observed my flowers; and it was most abundant in the district of Galilee, where it and the rhododendron, which grew in rich abundance around the paths, most strongly excited my attention."

But we must return to our lowly Lily, which, during May and June, is blooming in many a pleasant wood in England, though rarely in those of Scotland. The stalk is about a foot high; and the fragrant pure white, almost globular little bells, hang drooping in a long one-sided cluster. The large leaves are rarely more than two in number, and scarlet berries succeed the blossoms. The flower had the old names of Conval Lily, May Lily, and Lirioconfancie. It is indigenous to most of the countries of Europe from Italy to Lapland, and is very abundant in the woods of France and Germany. The German and Dutch names for the plant both signify May-flower, and the French call it *Muguet de Mai*, as well as *Lis des Vallées*. It is termed in Italy *Mughetto* and *Giglio Convallio*.

The blossoms of this plant, distilled in wine, were supposed to be efficacious in curing many complaints.

Parkinson says: "The flowers of the white kinde are often used with those things that helpe to strengthen the memorie, and to procure ease to apoplectic persons. Camerarius setteth downe the manner of making an oyle of the flowers hereof, which, he says, is very effectual to ease the paines of the gout, and such like diseases, to be used outwardly, which is this: 'Have filled a glass with the flowers, and being well stopped, set it for a moneth's space in an ante's hill, and after being drayned cleare, set it by for use.'" Ettmuller recommended the flowers to be dried and powdered to make a snuff good for the cure of head-ache; and in Germany the flowers mingled with wine are still used for this pain. The Hanoverians are so fond of their lowly wild Lily, that on Whit-Monday large troops of merry-making people go forth to the nighbouring woods to gather it; and when evening falls on their homes, there is scarce a house in Hanover which is not adorned with a large bouquet of these flowers. A pleasant perfume is made in some countries from the blossoms of the Lily of the Valley.

4. Polygonátum (Solomon's Seal).

1. *P. verticillátum* (Narrow-leaved Solomon's Seal).—*Leaves* lanceolate, whorled; *stem* erect, angular; *root* perennial. This is a very rare flower of Scottish woods and glens, and of one locality in Northumberland. It has a stem two feet high, and numerous leaves growing in whorls of from three to five. Its whitish drooping flowers expand in June, and it has red berries.

2. *P. multiflórum* (Common Solomon's Seal).—*Leaves* egg-shaped, oblong, half clasping, smooth, and alternate;

stalks one or many flowered; *stem* rounded; *root* perennial. This Solomon's Seal, though truly wild in several parts of England, is far from being a common flower of our woods. Its stem is about two feet high, and its bright glossy green leaves are very conspicuously marked with nerves, and hang drooping in an opposite direction from the large nodding waxen white flowers, tipped with green. It blossoms in May and June.

This is still a favourite garden flower; but it has lost much of its old repute as a wondrous healing herb. On cutting the roots transversely, some marks are apparent, having a resemblance to the characters of a seal. These to the old herbalists were an indication of its uses; it was destined to seal or consolidate wounds. From the ancients the notion descended to our own old writers on plants, and to those on the Continent; and the names of *Sceau de Salomon* in France, of the Italian *Sigillo di Solomone*, and the Spanish *Sello de Salomon*, all have reference to the belief that the plant bore the impress of the celebrated seal of him who spoke of plants from the cedar of Lebanon to the hyssop on the wall. Gerarde says: "But note what experience hath found out, and of late daies especially, among the vulgar sort of people of Hampshire, which Galen, Dioscorides, or any other that hath written of plants, have not so much as dreamed of; which is, that if any of what sexe or age whatsoever that chance to have any bones broken, in what parte of their bodies it be, their refuge is to stampe the rootes hereof, and give it to the patient in ale to drinke, which soddeneth and gleweth together the bones in very short space and very strongly; yea, although the

bones be but slenderly and unhandsomely placed and wrapped up."

This old doctrine of "signatures,"—the belief that plants bore outward signs of invisible virtues,—was believed in those days, ere herbcraft had yielded to botany, by all those

> "Who knew the cause of everie maladie,
> Were it of colde or hote, or moist or drie."

Our own countryman, John Ray, who, in this instance, as well as in many others, was greatly in advance of his times, was among the first to express his disbelief of the doctrine. In his work on "The Wisdom of God in Creation,"—a work whose design, in some measure, anticipated that of the celebrated series, the "Bridgewater Treatises,"—this great naturalist remarks: "As for the signatures of plants, or the notes impressed upon them as notices of their virtues, some lay great stress upon them, accounting them strong arguments to prove that some understanding principle is the highest original of the work of Nature; as indeed they were, could it be certainly made to appear that there were such marks designedly set upon them; because all that I find mentioned by authors seem to be rather fancied by men, than designed by Nature to signifie or point out any such virtues or qualities as they would make us believe. Howbeit, I will not deny but that the noxious and malignant plants do, many of them, discover something of their nature by the sad and melancholick visage of their leaves, flowers, or fruits. And that I may not leave that head wholly untouched, one observation I shall add, relating to the virtues of plants, in which I think there

is something of truth; that is, that there are, by the wise dispensation of Providence, such species of plants produced in every country, as are made proper and convenient for the meat and medicine of the men and animals that are bred and inhabit therein. Insomuch, that Solenander writes that, from the frequency of the plants that spring up naturally in any region, he could easily gather what endemical diseases the inhabitants thereof are subject to. So in Denmark, Friesland, and Holland, where the scurvy usually reigns, the proper remedy thereof, scurvy grass, doth plentifully grow."

Nor was the doctrine of planetary influence less generally believed than the notion of signatures; and Aubrey's opinion of a plant, "that if it be not gathered according to the rules of astrology, it hath little or no virtue in it," was pretty general little more than a century since. Michael Drayton, referring to the long lives of antediluvian men, says:—

> "Besides, in medicine simples had the power
> That none need then the planetary hour
> To helpe their working, they so juiceful were;"

But in his own time, the simples needed to be gathered at certain periods, as they might be under the influence of the Sun, Moon, Jupiter, Mars, or other planets. But Michael Drayton has fully described one of the herbalists of old, and has given us a list of the remedies which he employed; and as his "Polyolbion" is little read in modern times, we extract it for our readers:—

> "But absolutely free
> His happy time he spends the works of God to see,
> In those so sundry herbs which there in plenty grow,
> Whose sundry strange effects he only seeks to know

And in a little maund, being made of osiers small,
Which serveth him to do full many a thing withal,
He very choicely sorts his simples, got abroad:
Here finds he on an oak rheum-purging Polypode;
And in some open place that to the sun doth lie,
He Fumitory gets, and Eyebright for the eye;
The Yarrow wherewithal he stays the wound-made gore,
The healing Tutsan then, and Plantaine for a sore;
And hard by them, again, he holy Vervain finds,
Which he about his head that hath the megrim binds;
The wonder-working Dill he gets not far from these,
Which curious women use in many a nice disease;
For them that are with newts, or snakes, or adders stung,
He seeketh out a herb, that is called Adder's-tongue;
As Nature it ordain'd its own like hurt to cure,
And sportive did herself to niceties inure.
Valerian then he crops, and purposely doth stamp
To apply unto the place that's haled with the cramp;
The Chickweed cures the heat that in the face doth rise,
For physic some again he inwardly applies;
For comforting the spleen and liver, gets for juice,
Pale Horehound, which he holds of most especial use.
And for the labouring wretch that's troubled with a cough,
Or stopping of the breath by phlegm that's hard and tough,
Campana here he crops, approvèd wondrous good;
Or Comfrey unto him that's bruised, spitting blood;
And for the falling ill by Five-leafe doth restore,
And melancholy cures by sovereign Hellebore:
Of these most helpful herbs yet tell we but a few
To those unnumbered sorts of simples here that grew,
What justly to set down even Dodon short doth fall,
Nor skilful Gerarde yet shall ever find them all."

The root of the Common Solomon's Seal was, by the old writers, frequently prescribed for a use which it still retains in country places;—it is applied for removing the blackness produced by a bruise; and we have often witnessed the success of the remedy. The Turks are said to eat these roots, when prepared for the table; and

in times of scarcity they have been dried and ground for flour. The berries are of a bluish colour.

3. *P. officinále* (Angular Solomon's Seal).—*Leaves* egg-shaped, oblong, half clasping, alternate, light green and shining; *flowers* mostly solitary or two together; *root* perennial. This species has an angular stem a foot or a foot and a half high, and bears fragrant greenish white flowers in May and June. It is a very rare plant of some English woods.

A plant nearly allied to the Solomon's Seal (*Maiánthemum bifólium*) was described by Gerarde as growing in two places in the north of England; and has more recently been found at Howick in Northumberland, and Kenwood in Middlesex; but it is not generally believed by botanists to be a native plant.

5. Siméthis (Simethis).

1. *S. bícolor* (Variegated Simethis).—*Leaves* linear, the upper part keeled, the lower flat; *stem* and *leaves* enclosed in sheathing scales; *flowers* in panicles; *root* perennial. This beautiful little flower has been but recently added to our British Flora, and it has been found in two localities: the one near Bournemouth, Dorset; and the other on hills and by the sea-shore of Derrynane in Kerry. Its discovery, a few years since, in a plantation of firs, chiefly of *Pínus marítima*, was very interesting to British botanists. Plants found for the first time in the neighbourhood of the sea, are readily considered as of accidental introduction by ballast or other means; but in this case, the remote and elevated spot on which the flower was first seen, renders this



1. VARIEGATED [illegible]
Smethis bicolor

2. WILD HYACINTH OR BLUE BELL
Agraphis [illegible]

3. SEARCH GRAPE II
Muscari [illegible]

improbable; though, as Sir William Hooker and Dr. Arnott observe, it might have been brought thither among the trees which were planted there. The young lady who first saw the plant in this place, Miss Wilkins, says in a letter to the author: "I was visiting Bournemouth in the July of 1847, and was delighted with the rich variety and beauty of the wild flowers of that locality. While strolling through a fir plantation which skirts the cliffs, about two miles from Bourne on the Poole side, I observed a lovely white flower, which bespangled the long grass over a spot many yards in circumference. From my first glance at the elegant little plant, with its delicate star-like blossoms, I felt assured that it was something rare, though I little suspected that it would prove a discovery of so much interest. A specimen was forwarded to Dr. Lindley, who informed me that the flower was new in this country. The blossom itself very much resembles that of the single-flowered yellow asphodel, both in its formation and its woolly stamens; but the Simethis is white, delicately tinted with lilac. Its stem is from one to two feet in height, and its root of fleshy fibres; the seeds are black."

This lady adds, that the beautiful flower was again gathered from the spot in the summers of 1848 and 1849. In June, 1854, the author of these pages requested a friend, who was a botanist, to visit Bournemouth, in order to ascertain if the plant still grew there. This botanist wandered about the spot during the whole length of a midsummer day, but could discover no trace of flower or leaf; and the same result had followed the researches of a botanist known to the discoverer who

had visited the place in July in the preceding year. It has, however, been found at Bournemouth during the past summer, 1855 ; for Mr. James Hussey says, in the "Monthly Journal" of this year: "I had the pleasure of seeing the *Siméthis bícolor* on the 6th of July, near Bournemouth." The cause of its temporary disappearance seems to have been some disturbance of the soil, in consequence of new roads having been made near the place. The plant was first seen in its Irish locality in 1849. Mr. Hewes Watson states that, according to Dr. Harvey, the plant so lately discovered in England had been then found by Mr. Thaddeus O'Mahony growing in a perfectly wild situation, on hills near Derrynane Abbey; and that a specimen, agreeing in all respects with a Portuguese one in the University Herbarium, was sent from Derrynane in the June of that year.

The *Siméthis* is by some writers called by its older specific name of *planifólia*, which seems less characteristic than that of *bícolor*. It is also the *Anthéricum planifolium* of Linnæus. It is not unfrequently found on barren heaths in the west of France.

6. Ágraphis (Blue-bell).

1. *A. nútans* (Wild Hyacinth, or Blue-bell).—*Flowers* drooping in a raceme ; *segments* turning backwards ; *bracts* in pairs ; *leaves* linear, grooved, and pointed ; *root* perennial. There are few of our native woods, where, in early spring, we could not find the Blue-bells nodding to the wind, often clustering in such multitudes

as to tint the spot with their rich colour. In April and May one might often be reminded of the words of Keats:—

> "A youngling tree
> That with a score of light green brethren shoots
> From the quaint mossiness of aged roots,
> Round which is heard a spring-head of clear waters,
> Bubbling so wildly of its lovely daughters,
> The spreading blue-bells; it may haply mourn
> That such fair clusters should be rudely torn
> From their fresh beds, and scatter'd thoughtlessly
> By infant hands, left on the path to die."

Our wild flower is the *Hyacínthus non-scríptus* of Linnæus. Dodonæus says, that Parkinson so called it, "because no other, before himselfe, had written of this sorte;" but, he adds, that it is generally known in England by the name of Harebel. Gerarde calls it the Blew Harebel, or English Jacinth; and the French still term it *Jacinte des bois*. The Hyacinth of the ancients was some liliaceous plant, named from the youth Hyacinthus, fabled by the poet to have been transformed into a flower. The leaves of the Greek Hyacinth bore some marks which were imagined to resemble the Greek AI, alas! And our own early poets often refer to—

> "The letter'd hyacinth of darksome hue."

Thus Drummond says—

> "For aye,
> Oh hyacinths, your AI keep still;
> Nay, with more marks of woe your leaves now fill!"

and Milton and others echo the strain.

It was from the absence of these marks that our woodland flower received its earlier scientific name, and the later one of *Ágraphis* relates to the same circumstance. Its leaves are very green and glossy, and the bells hang from a stalk, often a foot high; the little bracts of purplish green colour being at the base of each partial flower-stalk. The bulbous root contains a slimy substance, which, in Queen Elizabeth's time, was used in stiffening muslin, in pasting the corners of books, and in fixing feathers to arrows. Every part of the plant possesses a slimy juice.

Dr. Braun, in his recent work on the "Phenomenon of the Rejuvenescence of Nature," remarks, that the greater part of the vegetation which unfolds itself in spring, after winter has passed over it, was already formed in the preceding summer and autumn. He observes that, in autumn even, we find in the terminal and lateral buds of the Oak the rudiments of leaves destined for next year; and in the buds of the Lilac are found, not only these, but the rich cluster of blossom for the future year, in which hundreds of closely-crowded flowers appear now but as inconspicuous green nodules. In the heart of the Tulip-bud, shielded by succulent leaf-scales, exists in autumn a little greenish yellow bud. This, the learned author adds, is the Tulip-stem for the next year, with all the parts which it elevates from the earth nine months later, namely, two or three leaves, between which lies hidden the blossom; the petals and stamens appearing as a uniform papilla not yet closed, as in the later state of the flower-bud, with the pistil in the middle, as a little three-lobed papilla. The spike of



the Hyacinth is yet more advanced at the same period in the interior of the many-scaled bud; for the three outer sepals of each flower begin already to close up.

What flower the ancients might have termed the Hyacinth is uncertain. Some have thought that the Fritillary, others, that the Martagon Lily, was the Greek Hyacinth. The flower was worn by the maidens of Greece who officiated at bridal festivities; and an annual festival, termed *Hyacinthia*, was held in Laconia in honour of Hyacinthus and Apollo. Homer speaks of the plant:—

"And sudden Hyacinths the turf bestrow."

Mr. Macaulay, in his paper on "The Flower-gardens of the Ancients," quotes an allusion of Tibullus, in which the surpassing beauty of a woman is compared to that of the Hyacinth, which exceeds in loveliness all flowers of the garden. The Oriental poets, as Hafiz, often describe waving tresses as resembling the curled petals of the Hyacinth; and "Hyacinthine locks" has become a common comparison.

7. Musca'ri (Grape Hyacinth).

1. *M. racemósum* (Starch Grape Hyacinth).—*Flowers* egg-shaped, drooping, in a crowded cluster, upper ones almost sessile; *leaves* linear and flaccid; *root* perennial. This is a rare plant, growing in pastures and sandy places. It is considered by Dr. Bromfield to be certainly indigenous in the fields about Caversham, in Suffolk, where it is abundant; but in some localities it is, perhaps, but "a garden flower run wild." The small

blossoms are bluish purple, and have the odour of starch; the plant abounds in a slimy juice, similar to that of the Hyacinth. The stalk is about a foot high, and the flowers appear in May. The French call it *Jacinte botride*, and the Italians *Giacinto*.

8. Állium (Onion, Leek, Garlic).

* *Stem-leaves flat, or keeled; not hollow.*

1. *A. Ampelóprasum* (Flowering Great Round-headed Garlic).—*Umbels* globose, compact, usually without bulbs, 3 alternate stamens deeply 3-cleft; *leaves* linear, keeled, pointed; *spathe* 1-leaved, pointed; *root* a compound bulb. This is a rare but very conspicuous plant, bearing, in July, large heads of pale purple flowers, on a stem three or four feet high. It has very long grass-like leaves, and, rarely, some small bulbs, about as large as a black currant, appear among them. It is truly wild on the cliffs of Guernsey; but on those of Steep Holmes, where it has been known to grow since the time of John Ray, it is thought by Mr. Borrer to be the remains of former cultivation. It is very nearly allied to the Garden Leek (*A. pórrum*), but differs in the clustered perennial young bulbs. It has the strong odour of garlic; an odour due to the free phosphoric contained by the *állium* genus, and which, being decomposed by heat, renders cookery available in subduing the strong flavour of the Onion or Leek. These plants are also much less acrid when grown in warmer climates.

Garlic and Onions of various kinds were planted in the gardens of the monasteries in this country; and the



RLAT RE ND HEADED GARLIC,
Allium babingtoni

Vschernoprasum

3. CROW G

A vineale

4. VIOLET ROUND HEADED G

A sphaerocephalum

man described by Chaucer would not, in his days, have been hard to find—

"Well loved he Garlike, Onions, and Leekes."

Fuller, referring to Garlic, says:—"Not to speak of the murmuring Israelites, who prized it even before manna itself, some avow it soveraigne for men and beasts in most maladies, though the scent thereof be somewhat valiant and offensive. Indeed, a large book is written on its virtues, which, if held proportion with truth, one would wonder any man should die who hath Garlic growing in his garden." It was greatly commended by the old writers as a cure for ague; and it is still in Kent, and probably in other counties, placed in the stocking of the child afflicted with hooping-cough, in order to allay this malady.

The worth attached to the Garlic and Onion tribe by the ancient Egyptians, often elicited the sarcasms of the writers of other nations. They are said to have sworn by the Onion, Leek, and Garlic, and even to have adored some of these plants. Juvenal, the Roman satirist, says:—

"How Egypt, mad with superstition grown,
Makes gods of monsters, but too well is known,—
'Tis mortal sin an onion to devour;
Each clove of garlic hath a sacred power,—
Religious nation sure, and blest abodes,
Where every garden is o'errun with gods!"

But if some abstained from onions, it is certain that the multitude ate them; and the whole tribe of these plants are yet much prized in Egypt as food.

2. *A. Babingtónii* (Bulbiferous Great Round-headed

Garlic).—*Umbels* loose and irregular; *spathe* in 2 leaves; 3 alternate *stamens* 3-cleft; *stem* leafy below; *leaves* linear, acutely keeled; *bulb* compound, of 2 divisions. This is a tall species, having a stem from four to six feet in height, and very long and rather broad leaves. The umbels of pale reddish flowers, with a green keel on their outer segments, expand in August, and the bulbs among them are numerous, and as large as cherries. It is a very rare plant, and is found in some places in Cornwall, and in Great Arran Island, Galway.

3. *A. Scorodóprasum* (Sand Garlic).—*Umbel* loose and globose, with numerous small bulbs; *stem* leafy below; *leaves* linear, flat; *stamens* included, 3 alternate ones 3-cleft. This species is not frequent, occurring only in the woods and fields of some hilly and mountainous districts in the north of England. Its stem is two or three feet high, rounded and firm, and the flowers are deep red, intermixed with dark purple bulbs, which are more numerous than the flowers; the spathe is short and broad, with a sharp point.

4. *S. oleráceum* (Streaked Field Garlic).—*Umbel* loose, bearing bulbs; *leaves* semi-cylindrical, channelled above, ribbed beneath; *stamens* simple, awl-shaped, and about as long as the flower; *root* perennial. A form having leaves somewhat flattened, and with more numerous ribs beneath, is the Mountain Garlic (*A. carinátum*) of some writers. The Streaked Field Garlic is not a common plant, though not rare in some parts of Essex, as about Felstead and Dunmow, where it is found in cornfields. It flowers in July, bearing dingy, yellowish, white blossoms on long stalks, with numerous reddish

purple bulbs on a stem which is leafy below. The leaves are used in cookery, and have the garlic odour in great power.

* * *Leaves hollow.*

5. *A. Schœnóprasum* (Chive Garlic, or Rush-leaved Onion).—*Umbel* globose, with many flowers, and without bulbs; *stem* naked, or with 1 leaf; *leaves* slender, rounded or grooved above, and pointed; *spathe* of 2 leaves; *stamens* undivided; *root* perennial. This is a pretty Garlic, bearing, in June and July, dense heads of bright purple or pinkish blossoms, on a stem about half a foot to a foot in height. It is found, though very rarely, in meadows and pastures. A form, with the leaves curved, and the style longer than the young germen, is the *A. sibíricum* of some writers; it grows on rocks and cliffs on the sea-shore of Cornwall. It is larger than the ordinary form of Chive Garlic, and differs in the bending instead of the upright leaves.

6. *A. vineále* (Crow Garlic).—*Umbel* globose, bearing bulbs, 3 alternate stamens deeply 3-cleft, projecting beyond the perianth; *leaves* cylindrical, smooth; *spathe* of one leaf; *root* perennial. This is one of the more common kinds of Garlic, growing in corn-fields and waste places in various parts of England and the South of Scotland. It occurs on sand-hills in some parts of the Kentish shore, as an those near Deal, where a variety is found destitute of bulbs. In ordinary specimens these are, however, very numerous, and are small, oval, and greenish brown; the flowers being small, few, and

of pale rose-colour, with green keels, having the anthers much protruded. The plant flowers in July.

7. *A. sphærocéphalum* (Small Round-headed Garlic).—*Umbel* globose, without bulbs; *leaves* nearly cylindrical, smooth, channelled above, alternate stamens 3-cleft; *capsule* triangular, with blunt edges; *bulb* having stalked offsets, perennial. This is a plant bearing, in June and July, numerous rose-coloured or purple flowers. It has a stem one or two feet high, and leafy below. It was discovered by Messrs. Babington and Christy, on the sands of St. Aubin's Bay, Jersey.

* * * *Leaves broad and flat.*

8. *A. ursínum* (Broad-leaved Garlic, or Ransoms).—*Umbel* nearly level at the top, without bulbs; *leaves* rising from the root, between egg-shaped and lanceolate, stalked; *root* perennial. This is the most common of all our species of Garlic. It is somewhat local, but found in abundance in moist woods and hedges in many a rural district. The wanderer in the wood in April, who sees its one or two broad, bright green leaves, may at first glance believe them to be the foliage of the Lily of the Valley; but an inadvertent footstep would soon, as it bruised the plant and drew forth its odour, remind him of the presence of Garlic. When the pretty white cluster of blossoms rises on a stalk about half a foot high, from between the two-leaved spathe, we are tempted to mingle it with the nosegay of wild flowers; though were we to do so, its offensive scent would quite overpower their sweetness. The plant continues in blossom till about Midsummer. Our fathers called this



1 BROAD LEAVED GARLIC OR RAMSONS
Allium ursinum

2 VERNAL SQUILL
Scilla verna

3 TWIN LEAVED
Scilla bifolia

4 AUTUMNAL S
S. autumnalis

herb Ramsies, Ramsons, Bear's Garlic, and Buckrams. The last name is very old, and one of those by which the plant was known to the Anglo-Saxons. It was esteemed in early time so beneficial to health, that one of our oldest proverbs says,—

"Eat Leekes in Lide, and Ramsins in May,
And all the year after physitians may play."

And Aubrey remarks, "The vulgar in the West of Englande doe call the month of March, Lide." Gerarde tells us that, in his time, the leaves were "stamped and eaten by divers in the Low Countries with fish, for a sauce, even as we do eate greene sauce with sorrill." He adds, "that many labouring men in this country eat them, in April and May, with butter." They are still commonly used in villages, when infused in brandy, as a tonic medicine.

The plant is believed to be injurious to the vegetation around it. It gives its unpleasant flavour to the milk of cows which eat it; and a friend residing in Somersetshire informs the author, that this plant proves very troublesome when in the hedges and grass of pasture-lands, rendering it necessary in spring to tether the cows, which, being just turned out, would eat it readily among the grass. He adds that he has known the flesh of calves to be flavoured by this Garlic. Sheep altogether refuse the plant.

The late Professor Johnston remarks of this plant, "that when distilled in a retort, a heavy volatile oil passes over and collects beneath the water which condenses in the receiver; and which is the same as that of onion, shallot, &c. This oil is of a brownish-yellow colour,



3 DROOPING S O B

4 YELLOW [illegible]

than two leaves. It flowers in March and April, and occurs in the west of England, but is a very doubtful native.

3. *S. autumnális* (Autumnal Squill).—*Cluster* somewhat corymbose, without bracts; *leaves* linear, numerous; *root* perennial. This species is less beautiful than the Vernal Squill. It flowers in August, and its leaves appear just as the blossoms are fully expanded. These are purplish-blue, with green lines down the back; and they grow on a stem three or four inches high. It is a somewhat rare plant on dry pastures at the south and west of this kingdom, though plentiful on grassy places and rocks in some parts of Cornwall, and also of the Isle of Wight. The species which furnishes the medicinal squills is *Scílla marítima*. This plant grows on the sandy shores of France and Southern Europe, and was a favourite remedy with ancient physicians.

10. Ornithógalum (Star of Bethlehem).

1. *O. Pyrenáicum* (Spiked Star of Bethlehem).—*Cluster* very long; *flower-stalks* equal, spreading, afterwards erect; *leaves* all from the root, linear, channelled and pointed; *root* perennial. The long raceme of yellowish-white flowers of this plant, which unfolds in June and July, may be found in some woods and pastures of England. Though rare, it is probably more truly wild than either of the other species. The Rev. C. A. Johns, who remarks that it is very abundant in the neighbourhood of Bath, says that the spikes of unexpanded flowers are often exposed there for sale as a pot-herb. It grows in several parts of Somersetshire, and also in Sussex and

Bedfordshire. The stalk is one or two feet high, and the leaves usually wither very early.

2. *O. umbellátum* (Common Star of Bethlehem).—*Flowers* forming a corymb, the lower partial stalks very long; *leaves* all from the root, linear, channelled, smooth; *root* perennial. The large star-like blossoms of this species expand in May and June, their snow-white sepals having each a line of green on the outside, and each flower having a membranous bract. The plant is a doubtful native of England, though occurring in meadows in various places, often near houses. The stem is from eight inches to a foot high, and the leaves are bright green and smooth. The species is common in the pastures of France, Switzerland, Germany, and Southern Europe. It continues to flower during two or three weeks, but never unfolds except in bright sunshine, and even then not before eleven; hence gardeners often call it Eleven-o'clock-Lady, and the French term it *Belle-d'onze-heures*, as well as *Ornithogale*. The Germans call it *Vogel-milch*, and the scientific name of the genus is from the Greek words for bird and milk.

The bulbous roots of this plant were said by Dioscorides to be commonly roasted or eaten, uncooked, with bread; and the roots both of this and other species have been known for centuries past as forming part of the vegetable food of Italy and the countries of the Levant, and as affording also in Sweden a resource in times of scarcity. Our species has acquired some interest from having been thought by Linnæus, and also by various commentators on Scripture, to be the "doves' dung," mentioned as the food of the famished inhabitants of

Samaria, during the siege recorded in the Book of Kings. It is remarkable that in an abridged Chronicle of the History of England, it is stated that during the famine which devastated England in 1316, the poor ate "pigeons' dung." Dr. Royle, in a learned dissertation on this subject, observes that Bochart has shown that the term "pigeons' dung" was applied by the Arabs to different vegetable substances, and mentions a light substance like moss, and a fleshy-leaved plant like a Salsola or Fig Marigold, as another. Dr. Royle considers, however, that pulse was most probably the substance intended by the Scripture writer; but as the *Ornithógalum* is abundant in the neighbourhood of Samaria, it is not very improbable that its bulbs may have been stored and used in time of need.

3. *O. nútans* (Drooping Star of Bethlehem).—*Flowers* in a loose one-sided raceme, drooping; *filaments* broad, 3-cleft, the alternate ones longer and with deeper lobes; *root* perennial. This plant is a doubtful native, growing rarely in fields and orchards in England. It is distinguished by its loose cluster of nodding flowers, which are larger than the common kind, though, like them, white within and externally green. The stem is from nine inches to a foot high, and the flowers expand in March and April.

11. Gágea (Gagea).

1. *G. lútea* (Yellow Gagea).—*Flowers* in an unbranched umbel; *stem* angular; *root-leaves* narrow, lanceolate, ribbed, keeled, erect, taller than the stem; *root* perennial. This rare wild flower occurs in pastures

and bushy places in several parts of England and the Lowlands of Scotland. Its stem is about a half-a-foot high. The blossoms, which expand from March till May, are yellow within, tipped with green, and green externally. The plant was formerly included in the genus *Ornithógalum*, and is chiefly distinguished from it by its yellow flower.

12. Llóydia (Lloydia).

1. *L. serótina* (Mountain Lloydia).—*Leaves* semi-cylindrical, those on the stem widened at the base; *flower* solitary; *root* perennial. This plant, which was formerly called Mountain Spiderwort, is very rare, growing on some of the most elevated mountains in Wales. Its stem is five or six inches high, with several small leaves; and its flowers, which expand in June, are erect, white, externally veined with green, and internally with reddish lines. It is the *Anthéricum* or *Phalángium* of some botanists.

13. Túlipa (Tulip.).

1. *T. sylvéstris* (Wild Tulip).—*Flower* solitary, rather drooping; *stamens* hairy at the base; *leaves* linear-lanceolate, smooth; *root* perennial. This plant has but few British localities. It has been found in chalk-pits in Norfolk, Suffolk, Hertfordshire, and Middlesex, and has lately been discovered in the neighbourhood of Alton, Hants. It occurs, too, in a few places in Scotland. Its flower is sufficiently like those of our gay Garden Tulips to enable any one to identify it as of the same genus; but the plant has a much smaller blossom than the



cultivated species, and its colour within is bright yellow, and externally yellowish-green. It is drooping and fragrant, and both anthers and pollen are yellow. It has very narrow leaves and a bulbous root, which increases by sending out a fibre, at the end of which a new bulb is formed. This Tulip grows wild in the southern parts of France; and Linnæus enumerates it among the flowers of Sweden. Though no flower affords a greater number of varieties than the Tulip, yet there are not more than two or three original species. Wild Tulips ornament the fields of Southern Europe, and are plentiful in fields about Constantinople, as well as in those of Palestine. The beautiful varieties in our gardens have been chiefly propagated from the kind named after Conrad Gesner (*Tulipa Gesneriána*). This naturalist first made the plant known by a botanical description and figure, he having, in 1559, seen the flower in a garden at Augsburg. The first tulips planted in England were sent hither from Vienna about the end of the sixteenth century; and by the middle of the seventeenth, the gambling practices connected with the Tulipomania, which prevailed especially in the Netherlands, had filled all Europe with astonishment.

14. Fritillária (Fritillary).

1. *F. Meleágris* (Common Fritillary, or Snake's-head). —*Leaves* narrow, lanceolate, pointed, and all alternate; *stem* single-flowered; *flower* drooping, the points of the perianth turning inwards; *root* perennial. It is not often that we find the large flower of the Fritillary

nodding over the grass of our meadows, though on moist pastures of the east and south of England it is less unfrequent than elsewhere. The Author has found it, on more than one occasion, on grassy places near Higham in Kent; and many years since it grew so abundantly in a meadow between Mortlake and Kew, that the spot long bore the name of Snake's-head Meadow. It was not until after the middle of the last century known to be a native flower, but it was described a century earlier as a garden plant. It was called by the writers of that period *Lilium variegatum*, and Chequered Daffodil; and it had also the name of *Narcíssus Caparonius*, from Noel Capperon, an apothecary of Orleans, who was one of the victims of the massacre of St. Bartholomew's-day. This botanist, who collected a large number of curious plants, is said by Beckmann to have given this flower the name of *Fritillaria*, from the regular square reddish or reddish-brown marks which chequer the blossom, and would remind one of a chess-board. Dodonæus gave it the specific name because the same marks suggested those on the feathers of the Guinea fowl, *Numidia meleágris*. Gerarde calls it Turkey Hen, or Ginny-flower; and remarks that many plants were sent him from Paris "by the curious and painful herbalist, John Robin." He adds, that they were greatly esteemed "for the beautifying of our gardens and the bosoms of the beautiful."

The flower of the Fritillary droops from the summit of a stem about a foot high. Its colours are pale and dark brownish-purple, and it expands in April. It is sometimes found of a pure white or greenish-white colour.

Order LXXXIX. MELANTHACEÆ.—MEADOW SAFFRON TRIBE.

Perianth 6-parted or united below into a tube; *stamens* 6; *anthers* turned outwards; *ovary* 3-celled; *style* deeply 3-cleft; *capsule* divisible into 3 valves; *seeds* each contained in a membranous case; *leaves* sheathing at the base with parallel nerves. This small Order of plants contains species which have very powerful medicinal properties. Some are acrid, narcotic, and even poisonous.

1. Cólchicum (Meadow Saffron).—*Perianth* of 6 divisions, with a very long tube rising from a sheath; *capsules* 3-celled; *seeds* round, numerous. Name from Colchis, a country famous for its medicinal plants.

2. Tofiéldia (Scottish Asphodel).—*Perianth* of 6 divisions, with a small 3-lobed sheath. Name in honour of Mr. Tofield, an English botanist.

1. Cólchicum (Meadow Saffron).

1. *C. autumnále* (Common Meadow Saffron).—*Leaves* flat, erect, broadly lanceolate; *bulb* large, solid, perennial. This is not a common flower, though in some moist meadows, in various parts of England, its leafless large purple blossoms are very conspicuous during August and September. Blooming at a late season, when rain and frost prevail rather than sunshine, the ripening of its seeds is effected by a remarkable process. The flowers, which arise from the root on long slender tubes, wither

away without leaving any indications of the seeds which are to reproduce them; but the germen lies concealed within the bulbous root, and remaining there through the winter, comes up on a fruit-stalk in the spring-time, to ripen above the surface of the soil, while at the same period the green leaves of the plant spring up around it. Bishop Mant thus refers to this wonderful provision :—

"Or go to Monmouth's level meads,
Where Wye the gentle Monmow weds,
Long brilliant tubes of purple hue
The ground in countless myriads strew.
Anon, but brief the space between,
No more these countless tubes are seen;
The meads their verdant cloak resume,
And with that evanescent bloom,
You deem, perhaps, its spirit fled,
Abortive, virtueless, and dead.
You deem amiss. Within the breast
Secure of parent earth, the chest
That holds the embryo fruit is laid;
Thither by their long tube convey'd,
Safe from the force of winter skies,
Conceal'd the buried virtue lies,
Till spring-time from the fostering earth
Shall wake the meditated birth,
The germen on its stalk display'd,
And with embracing leaves array'd,
And when the vernal grasses' bloom
Shall spread the hay-field's rich perfume,
Bright June mature in timely hour
The seeds of August's early flower."

The Meadow Saffron is believed to have taken its botanic name from Colchis, a country on the eastern shore of the Euxine, or Black Sea, where it is said to

have grown in abundance among many plants of such powerful properties as to have led to an allusion of Horace :—

> "Or tempered every baleful juice
> Which poisonous Colchian glebes produce."

The French call the plant *Mort au chien*, and *Tuechien*, as well as *Colchique d'automne*. Although our domestic cattle will not eat it under ordinary circumstances, and the tall flower often stands up late in the year among the grass which has been cropped all around it, yet when turned early into the spring meadow, they sometimes crop it, when pain and often a great mortality ensue. Mr. Purton remarks that farmers should be cautious of turning hungry cattle into pastures where it abounds, as it proved fatal to a number of calves which were at this season brought into lands where its leaves formed a large part of the herbage. It is probable that when dried it loses its acrimony; for the plant is abundant in the meadows of the Italian Alps, where it must form a portion of the hay.

The Colchicum was formerly regarded as a most effectual cure for various complaints; and an infusion of its bulbs in vinegar, and made, with the addition of sugar, into a syrup, has been recommended in pulmonary affections. A similar oxymel is still prepared, and is said to be a useful pectoral; it should, however, be employed with caution. The famous *Eau médicinale*, so praised for its cure of gout, is composed mainly of a tincture of this plant; and in Switzerland, where the ancient repute of its medicinal virtues remains in full power, the peasantry tie the flowers around the neck of

sickly children as a restorative. This may be a safe proceeding; but Dr. Hamilton, in his "Flora Homœopathica," says, "Garibel, in his 'Histoire des Plantes des Environs d'Aix,' records that a servant was killed by taking the flowers for an intermittent fever, for which malady they were said to be a remedy."

Dr. Storck, of Vienna, some years since, called the attention of European practitioners to the value of this plant in cases of rheumatic gout; and it is still used both in the ordinary medicines for this complaint, and in the globules of the homœopathist. Of its dangerous nature, however, in the hands of the unskilful, we have had even recent proof; as in the course of the year 1855, two men died in this kingdom in consequence of its use. It appeared, on examination, that they were two robust labouring men, who, being troubled with occasional pain, had applied to an empiric for relief, and who both sank on the following day from prostration. An irritant poison was found to have caused death; and a chemical analysis proved that colchicum had been administered in a powerful form.

The bulb of the Meadow Saffron is gathered for use when about the size of a chestnut; and its power is supposed to be the greatest when it is about a year old. It is a solid bulb, without scales, and fleshy and white in the interior, with a milky juice, which has a very acrid and bitter taste.

2. Tofiéldia (Scottish Asphodel).

1. *T. palústris* (Mountain Scottish Asphodel).—*Flowers* in a dense crowded head, with a bract at the base of the

partial flower-stalk; *stem* nearly leafless; *leaves* sword-shaped, in 2-rowed tufts; *root* perennial. This plant is not unfrequent in boggy places on the mountains of Scotland, the north of England, and Ireland. Its stem is four or five inches high; and its short dense spikes of greenish-white flowers appear in August. The narrow sword-shaped leaves all spring from the root.

Order XC. ERIOCAULACEÆ.—THE PIPEWORT TRIBE.

Flowers in heads; *perianth* chaffy or white, or colourless, 2—6 parted; *stamens* 2—6, if in two rows, the inner row most developed; *ovary* free, with 1 or more cells; *ovules* solitary, pendulous; *fruit*, a capsule. The Order consists of Herbaceous plants or under-shrubs, generally having the stamens and pistils in different flowers on the same plant.

1. Eriocaúlon (Pipewort).—*Flowers* arranged in a compact scaly head; *barren flowers* in the middle; *perianth* divided into 4 or 6 segments; *stamens* 4—6; *anthers* roundish, 2-celled; *fertile flowers* in the circumference; *perianth* deeply 4-parted; *style* very short; *stigmas* 2—3; *capsule* 2—3, lobed, with as many cells and valves; *seeds* round, solitary. Name from the Greek *erion*, wool, and *caulos*, a stem.

1. Eriocaúlon (Pipewort).

1. *E. Septanguláre* (Jointed Pipewort).—*Stem* with several angles, much longer than the flattened pointed

leaves; *outer scales* without flowers; smooth *inner scales*, and *flowers* fringed at the extremity; *root* perennial. This is a rare and very singular aquatic, found in several lakes in the islands of the Hebrides, and frequent at Cunnamara in Ireland. The slender stalk is sometimes half-a-foot high, at others twice that height, varying according to the depth of the water in which it grows; and it bears, in September, a solitary globular white head of little flowers. The leaves form a tuft around its base, and are two or three inches long and awl-shaped, while the roots consist of numerous long white jointed fibres. The French call the Pipewort *La Joncinelle*.

Order XCI. JUNCACEÆ.—THE RUSH TRIBE.

Perianth 6-parted, usually chaffy, but sometimes coloured as in Asphodel; *stamens* 6, inserted into the base of the segments; or sometimes 3, inserted opposite the outer segments; *anthers* turned inwards; *ovary* superior; *style* 1; *stigmas* 3 or (in Asphodel) 1; *capsule* 3-valved, usually many-seeded. This is a Tribe of plants growing on moist lands, having cylindrical or grassy leaves, and, except in Asphodel, brown flowers. The true rushes (*Júncus*) are social plants, often covering large moist districts; many of them known in the coldest parts of the world, and a few in the tropics. The stems of some are used for making mats and the wicks of candles.



1 OUT PLUSH
Juncus effusus

2 HEAD P
J. glaucus

3 BENT FLOWERED JOINTED R
J. obtusiflorus

4 THREE LEAVED R
J. trifidus

5 ROUND ERECTED R
J. compressus

6 SLENDER SPREADING R
J. tenuis

7 CAPITATE R
J. capitatus

1. Júncus (Rush).—*Perianth* chaffy; *filaments* smooth; *stigmas* 3; *capsule* 3-celled, 3-valved; *seeds* numerous, minute, roughish; *leaves* mostly round, rarely flat. Name from *jungo*, to join—the stems having been used as cordage.

2. Lúzula (Wood Rush).—*Perianth* chaffy; *filaments* smooth; *stigmas* 3; *capsule* 1-celled, 3-seeded. Name supposed to be from the Italian *lucciola*, a glow-worm, because the heads of flowers sparkle when wet with dew-drops.

3. Narthécium (Bog Asphodel).—*Perianth* of 6 coloured sepals and petals; *stamen* woolly; *stigma* 1; *capsule* 3-celled; *seeds* numerous. Name from the Greek *narthex*, a rod, apparently from the long straight raceme of flowers in some of the species.

1. Júncus (Rush).

* *Stems cylindrical, tapering to a point; leaves none.*

1. *J. effúsus* (Soft Rush).—*Stems* soft, not furrowed, but faintly marked with lines; *panicle* branched below the summit of the stem; *capsule* blunt, a little shorter than the sepals; *root* perennial, and creeping. This is a common Rush of marshy lands, growing in clumps to the height of one or two feet, and having no leaves, or merely a few thread-like leaves at the top of the scales, which serve as a sheath to the stems. The stems are soft and pliant, of a pale green; and the brown panicle, which appears in July, is sometimes very spreading, at others nearly globose, and is usually about halfway down the leaf-like stem. The stems of both this and

the next species are used for plaiting into mats and chair-bottoms, and their pith was once very extensively used as wicks for candles. Ere lights of a superior character had superseded the rush-lights, these were to be found in most households, and many cottagers used no candles save such as they could make from the rushes of the neighbouring wet meadow land; but in few counties in our time, save in Norfolk, are these home-made candles in nightly use, nor are rushes now gathered largely for sale. Even yet, however, in that county, there exists an annual fair, called a Rush Fair. This, which was formerly held at the village of Sprowston, near Norwich, was termed the Magdalen Fair; but in consequence of disorderly conduct in the frequenters of the place, that particular fair was done away, though a fair for the sale of rushes is yet held outside the Magdalen Gates. A correspondent of the "Gardener's Chronicle" estimated the quantity of rushes brought, two or three years since, annually to this spot, at about eight hundred gross; each gross containing twelve bundles, each bundle twelve whips, and each whip about fifty rushes. The rushes are said by this writer to be gathered chiefly from the Happing and Flegg Hundreds, and to be collected mostly by women, who wade in the water of the bogs up to their waists to procure them. They are often assisted by their children in preparing them for sale. This is done by soaking, drying, and peeling them. He remarks—"Price's night-lights do not much compete with the farthing rush-lights or dips, as these latter are still largely consumed by our poor in Norwich, as well as by the cottagers in the country,—but before

they go to bed, not as night-lights. I suppose they afford the cheapest light, as they burn much longer than cotton-dips; otherwise they are of the same price. I am told that considerable quantities of these rushes are also taken to Yarmouth and sold."

But, in earlier days, rushes were of far greater importance in the household economy of this kingdom, when sleeping apartments, dining-rooms, halls, theatres, and even the presence-chambers in palaces, as in that of Queen Elizabeth, were strewed with them. That floors were occasionally paved with coloured tiles, some old illuminations serve to show; and carpets, which were introduced in the thirteenth century, were used in the royal apartments of Edward III.; but until carpets became general, the floors were mostly of board, and strewn with rushes. In an account of Thomas à Becket, published in 1528, the writer says, "He was manfull in his houshold, for his hall was everie daye, in somer season, strewed with greene rushes, and in winter with clene hey, for to save the knyghtes' clothes that sate on the floor, for defaute of place to sit on." The floors in the "good old times" were not very frequently washed; and that the rushes often concealed much that was offensive to the eye, we know from the disgust expressed by Erasmus, as well as by some English writers, at bones and other refuse being daily thrown from the table, while in few homes were the rushes daily or even weekly renewed. Old painters represent dogs as hunting for bones among the plants around the table; but probably in many houses, and in later days, even generally, more attention to cleanliness was

given, and sweet and fresh flowers were mingled with newly-strewn rushes. Bulleyne says, "Rushes grown upon dry ground be good to strew in halls, chambers, and galleries, to walk upon, defending apparel, as trains of gowns and kirtles, from the dust;" and Lemnius, a physician and divine of Zealand, remarks, on his visit to London, with great approval, the cleanliness of the English, and says, "Their chambers and parlours, strawed over with sweete herbs, refreshed me; their nosegays, finely intermingled with sundry sorts of fragrant flowers in their bed-chambers and private rooms, with their comfortable smell cheered me up, and delighted all my senses." The churchwardens' accounts of the church at St. Mary's-at-Hill show that rushes were commonly used in churches; for several items occur similar to the following—"Paid for two berden of rushes for the strewing the newe pewes, 3*d.*"

The great use of rushes for strewing led to certain festivals, called Rush Bearings, which, like the old Wakes, became, in course of time, scenes of idleness and intoxication, and appear to have given annoyance to the sober portion of the community. These gatherings were gradually neglected as the use of rushes in households was discontinued. It is not improbable that the fibre of this and other common rushes may prove of use to the paper-maker. The Chevalier de Claussen, in some recent experiments on plants likely to furnish paper pulp, directed his attention to the papyrus,—the "paper reed by the brook,"—of which the ancients made their paper. He found that it contained a large proportion of fibre, easily bleached; but as this plant is



1 COMMON RUSH
Juncus conglomeratus

2 LESSER SHARP SEA R.
J. maritimus

SHARP FLOWERED JOINTED R
J. acutiflorus

3 CLUSTERED ALPINE R
J. castaneus

5 TOAD R
J. bulbosus

6 TWO FLOWERED R
J. bufonius

7 THREE FLOWERED R
J. trighumis

so rare, an abundant supply would not be readily procured. "I directed, therefore," says the Chevalier, "my attention to plants growing in this country; and I found, to my great satisfaction, that the Common Rushes (*Júncus effúsus*), and others, contain forty per cent. of fibre, quite equal, if not superior, to papyrus fibre, and a perfect substitute for rags in the manufacture of paper; and that one ton of rushes contains more fibre than two tons of flax straw." The Chevalier had not found so large an amount of fibre in any native plant, except in the shavings of fir, which yielded the same proportion, but which required more expense in the preparation. Rye-grass was found also to furnish thirty-five per cent. of paper fibre, which was easily bleached; but this was not so strong as the rush fibre. "Hemp and flax are," he says, "exactly suitable for the purpose of the paper-manufacturer, but their culture is expensive."

2. *J. conglomerátus* (Common Rush).— *Stem* soft, faintly marked with lines; *panicle* repeatedly branched, usually forming a round head, but in a variety more or less spreading; *capsule* terminating in a little point; *root* creeping, and perennial. This Rush is very similar to the last; and many botanists unite the two into one species. It has soft pliant stems, about two feet high; and the brown head of flowers, which expands in July, grows at some distance from the summit. It is, like the last, a very common plant, and was doubtless as much used for strewing in olden times. Its pith was also used for candles, as it still is for making little baskets and children's toys. Rushes are, in country places, often

twisted together to tie hurdles and other rustic implements; and the rushes of some countries are commonly made into ropes and cables, while the earliest cordage was probably made of them. Professor Burnett says that sailors call cables junks, as *juncus* itself is a derivation of *jungo*, to bind or join together. Most persons, whose early days were spent in the country, have woven them into baskets; and many a country boy could say with Clare,—

> "And on this bank how happy have I felt,
> When here I sat and murmur'd nameless songs,
> And, with the shepherd-boy and neat-herd, knelt
> Upon yon rush-beds, plaiting whips and thongs!"

The French call the rush *Jonc*, and their cream-cheese is called *jonchée*, because served up on its little frail of green rushes. The Germans term the plant *Binse*. A large species of Rush is cultivated in Japan entirely for making floor-mats; and mats and chair-bottoms were formerly made in this country of our Common Rushes; but the Lake Club Rush (*Scirpus lacústris*) is now used for that purpose, and is much better adapted for it.

3. *J. glaúcus* (Hard Rush).—*Stem* very rigid, and strongly marked with lines; *panicle* loose, much branched, erect; *capsule* oblong, pointed rather shorter than the sepals; *root* creeping, black, perennial. This Rush is about two feet high, its stems tough, rigid, and glaucous, with purplish sheaths at the base. It bears, in July, a panicle of greenish-brown flowers, with a broad green line down the middle of each segment of the perianth. It is a common plant by ditches, on moory grounds and moist waysides, and is sometimes very



1 BALTIC RUSH
Juncus balticus

2 THREAD R
J. filiformis

3 GREAT SHARP SEA R
J. acutus

4 BLACK HEADED JOINTED R
J. nigrella

5 SHINING FRUITED J. R
J. Lampocarpus

6 LESSER BOG J. R
J. [illegible]

7 HEATH R
J. squarrosus

troublesome on wet lands used for pasture. It is gathered in Holland while green, and afterwards used by gardeners in tying trees and shrubs.

A plant, described as *J. diffúsus*, is thought by some botanists to be but a form of this. It is a stiff hard Rush, differing in its much smaller capsule; which, instead of being oblong, with a spinous point, is inversely egg-shaped and blunt, with a spinous point; its stem, too, is more faintly marked with lines. It is found growing with the last two species, but is apparently rare.

4. *J. Bálticus* (Baltic Rush, or Coast Rush).—*Stem* rigid, naked, pungent, straight, acute; *panicle* erect, branched, few flowered; *bracts* shorter than the panicle; *capsule* oblong, blunt, spine-tipped; *root* creeping. The stems of this Rush are about a foot high, smooth, with brown scales at the base. It bears, in July and August, its dense panicle near the top, consisting of dark-brown flowers, with a pale line down each segment. It was discovered by Mr. Drummond on the sands of Barry, near Dundee, and has since been found on sandy seashores, and on the banks of rivers not far from the sea, in several parts of Scotland. Its root creeps extensively.

5. *J. filifórmis* (Thread Rush, or Slender Rush).—*Stem* naked, slender, nodding; *panicle* few-flowered; *capsule* nearly globular, spine-tipped; *root* perennial, and creeping. This species is remarkable for its thread-like stems, which, in August, bear their panicles of greenish-brown flowers on one side, far below the middle. The Rush is very slender and pliant, and of a pale green hue. It is rare, growing on the stony margins of lakes

at the north of the kingdom. It is about ten or twelve inches high.

6. *J. marítimus* (Lesser Sharp Sea Rush).—*Stem* naked, the barren leaf-like ones very sharp pointed; *panicle* loose near the summit; *outer bracts* spinous; *capsule* oblong, spine-tipped, as long as the perianth; *root* perennial, and fibrous. This is not a generally distributed Rush; but it grows among the sand-grasses by the sides of some salt rivers, and in salt marshes in various parts of the kingdom:—

> "On ocean's marge,
> Whose mellow reeds are touch'd with sounds forlorn
> By the dim echoes of old Triton's horn."

In places where it is plentiful, it aids, with the other plants, to consolidate marshy and muddy soils. Its stems are slender, about two feet high, and its brown flowers appear in August, in a long loose panicle. Its stems have leafy clammy sheaths at their base.

7. *J. acútus* (Great Sharp Sea Rush).—*Stem* naked, sharp pointed; *panicle* dense, near the summit; *outer bracts* spinous; *capsule* broadly egg-shaped, suddenly terminating in a point; *segments of perianth* about half as long as the capsule; *root* perennial. This, which is the largest of our native Rushes, is truly a magnificent plant, and cannot fail to attract the observation of those who wander among the sand-hills, or the no less dreary salt-marshes where it grows. Its large clumps of tall, stiff, straight stems, looking like masses of rigid deep green leaves, are from three to six feet in height; and in July the crowded panicles of brown flowers are conspicuous at the tops of the stems, though not nearly so

much so as the large, glossy, bright brown capsules, which, in September and October, succeed them. These are so handsome, that we are fain to gather them to mingle with the few sea-side flowers yet left to the autumn; but safer far would it be for the hand to grasp the sea-side holly with all its prickles, than to encounter this sharp Rush, which has penetrated many an unguarded finger with no slight wound. This plant grows on the shores of Norfolk, and some other counties; but it is rare, occurring chiefly on the south and west coasts of England and Wales. On the sandy shores about Sandwich, in Kent, and between that place and Pegwell Bay, as well as on some of the neighbouring salt-marshes, clumps of this plant may be seen often near the roadside, with masses of tall green fennel waving near them. This Rush is also planted on some of our shores, to preserve them from the encroachments of the sea; for its fibrous roots run far down into the light soft soil, forming a matted mass, which aids in its consolidation. In Holland, where it is planted on the sea embankments, the rushes are regularly cut down in the flowering season, and dried and sold in bundles, the rigid stems being used for scouring copper and other vessels. They are also plaited into ropes, baskets, and mats. This Rush grows on the shores of Greece, and is often planted on those of America.

* * *Stems leafy; leaves rounded, or somewhat flattened, jointed internally.*

8. *J. acútiflorus* (Sharp-flowered Jointed Rush).—*Stems* and *leaves* slightly flattened; *panicle* repeatedly

compound; *segments of the perianth* unequal, very acute, nearly as long as the egg-shaped taper-pointed capsule: *root* perennial. This is a slender plant, one or two feet high, bearing its pyramidal panicle of greenish-brown flowers at the top of its erect stem in July and August. The clusters are five or six-flowered, and the capsules are of a pale brown hue. It is one of our most common Rushes, growing in bogs and ditches, and such places as Clare refers to, when describing the scenes of childhood:—

"Swamps of wild rush-beds, and sloughs quashy traces,
Grounds of rough fallows, with thistle and weed,
Flats and low valleys of kingcups and daisies,
Sweetest of subjects are ye for my reed.

And long, my dear valleys, long, long may ye flourish,
Though rush-beds and thistles make most of your pride!
May showers never fail your green daisies to nourish,
Nor suns dry the fountain that rills by its side!
Your skies may be gloomy, and misty your mornings,
Your flat swampy valleys unwholesome may be,
Still, refuse of Nature without her adornings,
Ye are dear as this heart in my bosom to me."

9. *J. nigritéllus* (Black-headed Jointed Rush).—*Stem* and *leaves* somewhat rounded; *panicle* erect, slightly compound, 3 inner segments of the perianth rather longer and broader, all shorter than the capsule; *capsule* linear-oblong, 3-sided, and beaked; *root* perennial. This species grows on the mountains of Clova. It is from half a foot to a foot high, and flowers in July and August. The capsule is brown, finally becoming black and glossy.

10. *J. lampocárpus* (Shining-fruited Jointed Rush).—

Stem and *leaves* somewhat flattened; *panicle* repeatedly compound; *capsule* egg-shaped, acute, longer than the perianth; *root* perennial. This is a very common Rush in boggy and marshy places, and is one or two feet high. Its flowers appear in July and August, and are succeeded by dark-brown shining capsules. Its erect terminal panicle might have fitted it for Chaucer's description;—

> "The stalke was as rishe right,
> And thereon stood the knops upright."

11. *J. obtusiflórus* (Blunt-flowered Jointed Rush).—*Stem* and *leaves* rounded; *panicles* forked and spreading; *segments of perianth* very blunt, as long as the 3-sided pale brown capsule; *root* perennial. This is not an unfrequent plant on wet pastures and marshy places,—

> "With many a flag and rushy bunch bespread."

It is about two feet high, and bears in July, its brownish flowers sometimes tinged with purple.

12. *J. uliginósus* (Lesser Bog Rush, or Little Bulbous Rush).—*Stem* erect, sometimes swollen into a bulb at the base, leafy; *leaves* bristly, and rather knotty; *heads* lateral and terminal, about 3-flowered; *capsule* blunt, longer than the perianth; *root* perennial. This Rush is common in wet places and very variable, assuming the bulbous form only when growing on somewhat drier spots. It is from three to eight inches high, and bears, from June to August, a few little distant clusters of greenish-brown flowers, succeeded by the blunt light-brown capsules. In one of its forms it is the *L. bulbósus* of Linnæus; but when growing in very damp places,

its stems become prostrate, and rooting at each joint; and it is then the *J. subverticillátus* or *J. supínus* of some botanists.

* * * *Stems leafy; not cylindrical nor jointed.*

13. *J. castáneus* (Clustered Alpine Rush, or Black-spiked Rush).—*Stem* simple, with 2 or 3 flat keeled leaves at the lower part; *heads of flowers* terminal, usually solitary or in pairs, shorter than the numerous leafy bracts; *capsule* shining, nearly twice as long as the sepals; *root* creeping, perennial. This is a very rare plant of the Highlands of Scotland and the north of England, growing at a great elevation. It is erect, and is from eight to ten inches high, flowering in July and August.

14. *J. trífidus* (Three-leaved Rush).—*Stem* usually having one long leaf; *sheaths* awned, those at the base of the stem leafless; *bracts* 2, at the top of the stem, very slender and bristle-like; *heads* terminal, of about 3 flowers; *root* creeping. This rare species, inhabiting damp, rocky, mountainous places, has crowded, erect, thread-like stems, from four to six inches high. Its dark-brown flowers appear in July and August.

15. *J. compréssus* (Round-fruited Rush).—*Stem* erect, flattened above, and rounded below; *leaves* linear, channelled; *panicle* terminal, in one form shorter, in another longer, than the bracts; *capsule* roundish, spine tipped; *root* creeping. This Rush bears slender unbranched stems, from six to twelve inches high, and acute channelled leaves. Its flowers appear in July on moist pastures, where it is common. The variety, with few-

flowered panicles longer than the bracts, is found on salt grassy places, and is the Mud Rush (*J. cœnósus*).

16. *J. ténuis* (Slender Spreading Rush).—*Stem* forked above, panicled; *leaves* linear, slightly channelled; *capsule* nearly round, shorter than the very acute leaflets of the perianth; *root* perennial, fibrous. This is a slender Rush, about a foot high, flowering in July, and rare on the mountains of Scotland. It is the *J. Gesnérii* of Smith.

17. *J. bufónius* (Toad Rush).—*Stem* branched, leafy; *leaves* angular, bristle-like, channelled; *panicle* forked, longer than the bracts; *leaflets of the perianth* taper-pointed, membranous, longer than the capsule; *root* fibrous, perennial. This is a very small Rush, and is common in very wet grounds. It is from four to six inches high, its forked panicle bearing solitary flowers, mostly on one side of the stem, the flowers being pale green, with a white border. Its leaves are so very slender, that one might mistake it for one of the grasses; and it is sometimes called Toad-grass. Its stems are numerous, crowded together, and of a light-green colour. It flowers in July and August.

* * * * *Leaves all from the roots.*

18. *J. squarrósus* (Heath Rush).—*Leaves* rigid and channelled; *heads* clustered; *capsule* inversely egg-shaped and spine-tipped; *root* tufted, perennial. The stems of this Rush are about a foot high and triangular, and it has many stout rigid leaves, most of which turn one way. The rather large flowers appear in July, and are glossy brown, edged with yellowish-white.

It is found on heathy grounds, such as Crabbe describes:—

> "Here pits of crag, with spongy plashy base,
> To some enrich the melancholy place;
> For there are blossoms rare, and curious rush,
> The gale's rich balm, and sundew's crimson blush,
> Whose velvet leaf, with radiant beauty drest,
> Forms a gay pillow for the plover's breast."

This species is sometimes called Moss-rush, or Goose-corn; and it often fringes in abundance damp moory spots.

19. *J. capitátus* (Dense-headed Rush, or Capitate Rush).—*Stem* erect, thread-like, unbranched, leafy at the base; *head* sessile, solitary; *bracts* bristle-like; *outer segments of the perianth* awned; *capsule* tipped with a short spine. This little Rush grows on sandy grounds in the Isle of Jersey. It is from two to four inches high, with leaves about two inches long. Its terminal head of flowers appears from May to July.

20. *J. biglúmis* (Two-flowered Rush).—*Stem* simple; *leaves* flat; *head* solitary, 2-flowered, 1-sided, with leafy bracts longer than itself; *capsule* larger than the segments of the perianth; *root* fibrous, perennial. This is a rare plant, found in the bogs of Highland mountains. It flowers in August.

21. *J. triglúmis* (Three-flowered Rush).—*Stem* erect, unbranched; *leaves* flat; *head* solitary, terminal, 3-flowered, with membrane-like bracts; *capsule* acute, very dark-brown; *root* perennial, and creeping. This Rush is from three to six inches in height, flowering in July. It grows on the elevated mountains at the north of


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England and in Wales, and is especially frequent in the Highlands of Scotland.

2. Lúzula (Wood Rush).

1. *L. sylvática* (Great Hairy Wood Rush).—*Panicle* cymose, doubly compound; *flowers* in bundles; *segments of the perianth* awned, as long as the spine-tipped capsule; *root* perennial. The long flat leaves of this and the other species which formed the *Grámen Lúzulæ* of the older botanists, render them, in general appearance, more similar to grasses than rushes. The stem of this plant is a foot or a foot and a half high, and is terminated, in May and June, by a loose cluster of brownish flowers, varied with yellow anthers. It has broad taper-pointed leaves, shining, marked distinctly with lines, and fringed with long white scattered hairs, the root leaves forming a tuft. The capsules are of a bright chestnut colour. The plant is common in woods and shady places, especially among bushes on hilly districts. It is the *L. máxima* of some botanists.

2. *L. pilósa* (Broad-leaved Hairy Wood Rush).—*Panicle* cymose, little branched, spreading; *capsule* blunt, scarcely as long as the perianth; *leaves* lanceolate, hairy; *root* perennial. This is a smaller species than the last, and readily distinguished from it by its dark-brown flowers, growing singly on the partial flower-stalks, instead of being in little bundles. The stem is about a foot high, and the leaves are ribbed, and fringed with long fine white hairs.

3. *L. Forstéri* (Narrow-leaved Hairy Wood Rush).—*Panicle* cymose, erect; *partial stalks* single flowered;

capsule pointed, nearly as long as the perianth; *leaves* linear, hairy; *root* perennial. This plant, though resembling the last in habit, is much slenderer, and has narrower leaves. It is about a foot high, and bears its brown flowers in April and May. It is a somewhat local plant, inhabiting woods and thickets, but is common in some parts of the kingdom where the soil is chalky or gravelly. A plant which is by some botanists regarded as a species, and by others as a hybrid, has been by Dr. Bromfield termed *L. Borréri*. It is larger, and has a loose panicle, the upper stalks of which turn back after flowering; the filaments are also shorter. It occurs in the Isle of Wight, Sussex, and Herefordshire.

4. *L. campéstris* (Field Wood Rush).—*Panicle* of a few dense clusters; *segments of the perianth* pointed, longer than the capsule; *capsule* inversely egg-shaped, blunt, with a small point; *root* creeping, tufted perennial. This is a common plant in dry pastures, bearing its dark reddish-brown flowers in oblong spikes during April and May. It has a straight unbranched stem, from three to ten inches high, and dark-green leaves, very hairy at the margin. A taller variety of this plant, in which the spikes are almost all sessile, and collected into a nearly round head, is the *L. congésta* (Many-headed Bog-wood Rush) of some botanists.

5. *L. arcuáta* (Curved Mountain Wood Rush).—*Panicle* somewhat umbellate, of few heads, with long drooping curved branches; *bracts* membranous, fringed; *capsule* roundish and pointed, shorter than the bristle-pointed segments of the perianth; *leaves* channelled,

slightly hairy; *root* perennial. This is the smallest and one of the rarest of our native species, its slender stem varying from two to five inches in height. The leaves are short, narrow, and curved; those from the root numerous. It is found on the highest summits of the Cairngorum and Sutherland mountains.

6. *L. spicáta* (Spiked Wood Rush).—*Spike* oblong, dense, compound and nodding, the clusters shorter than their bracts; *segments of the perianth* narrow, and bristle-pointed, as long as the capsule; *capsule* acute; *leaves* small, slightly channelled, and hairy; *root* perennial. This is a mountain species, growing in the north of England, and more abundantly in Scotland. It bears, in July, its nodding spike of dark-brown flowers on a slender stem six or eight inches high. Its short narrow leaves are hairy at the margins of their sheaths.

3. Narthécium (Bog-Asphodel).

1. *N. ossífragum* (Lancashire Bog-Asphodel).—*Leaves* sword-shaped; *stamens* much shorter than the perianth; *filaments* woolly; *root* creeping and perennial. This elegant little flower is a favourite with the botanist who fears not to tread the moist grassy bog, where it overtops the Sundew, or Bog-Pimpernel. It is not unfrequent on wet places and moors, especially in mountainous districts; and the Author has found it in abundance in the bogs about Tunbridge Wells in Kent. The leaves grow mostly from the root in tufts, and are grass-like, about half the height of the stem, and of a pale green colour, and marked with prominent ribs. The slender stem is

about six or seven inches high, with a leaf here and there, and is often bending and rooting at the base. The star-like flowers are bright yellow, greenish at the back, the anthers red, and the filaments covered with thick yellowish wool. They grow in a tapering spike, one bract being at the base, and another just above the middle of each partial flower-stalk. An old prejudice was entertained in various Continental countries, and still exists among Swedish peasantry, that this plant is injurious to sheep, rendering their bones so brittle as to be easily broken; hence its name, *ossífragum*, bone-breaking, which has its synonyme in many lands. The French call it *Brise-os*; the Germans, *Beinbrechgras*; and the Dutch, *Beenbreekend*. Linnæus, in his "Flora Lapponica," refuted the notion of its injurious properties; and it is indeed usually left untouched by sheep, though readily eaten by cows and horses. It has much similarity to the genus *Anthéricum*, in which Linnæus placed it, though it is separated by modern botanists. Gerarde, who called it the Lancashire Asphodell, says of it: "It growes in manie rotten moorish grounds in this kingdome, and is used in Lancashire by women to die their haire of a yellowish colour, and therefore is by them tearmed Maiden-hair. It groweth neere unto the towne of Lancaster, as also neere unto Maudsley and Martom, not far from thence, where it was found by a learned and worshipful gentleman,—a diligent searcher of simples, and a fervent lover of plants,—Mr. Thomas Hesket, who brought the plants thereof into use for the encrease of my garden."

Order XCII. BUTOMACEÆ.—FLOWERING RUSH TRIBE.

Sepals 3, green; *petals* 3, coloured; *stamens* varying in number; *ovaries* superior, 3—6, or more distinct, or united into a mass; *carpels* many-seeded. This is a small Tribe of Aquatic plants, with handsome umbellate flowers and sword-shaped leaves.

1. Bútomus (Flowering Rush).—*Stamens* 9; *carpels* 6. Name from the Greek *bous*, an ox, and *temno*, to cut, because cattle cut their mouths with the leaves.

1. Bútomus (Flowering Rush).

1. *B. umbellátus* (Flowering Rush).—*Leaves* erect, narrow, acute, triangular, all from the root; *flower-stalk* round, smooth; *root* perennial. This is one of the loveliest plants which grace the quiet waters of England—flowering there when the Water-lilies have withered. The 3-sided leaves are so sharp that they often wound the hand extended to gather the showy cluster of rose-coloured flowers. These, surrounded by their membranous involucre, stand far above the surface of the water, on a stalk two or three feet high. The leaves are one or two feet long, generally twisted at the upper end, and much shorter than the flower-stalk. They are very acrid, and have been used medicinally—both seeds and roots having been formerly considered as antidotes to the bite of venomous reptiles. The white tuberous

roots are said to be roasted and eaten in Northern Asia. The numerous flowers are each on a partial stalk, which is often three or four inches long; and they vary from a delicate pink to white, and are sometimes much tinged with purple, while the stalks are often reddish. Gerarde calls the plant the Water Gladiole, or Grassie Rush, and says, "It is, of all others, the fairest and most beautiful to behold, and serveth very well for the decking and trimming up of houses, because of the beautie and braverie thereof." The French call the flower *Butome*, and the Germans, *Blumenbinse*. The number 3 predominates in its structure—the flower being of twice 3 pieces, the stamens thrice 3, the pistils 6, the capsules 6, and the membranous involucre 3-leaved. The plant, though frequent in England and Ireland, is not wild in Scotland.

Order XCIII. ALISMACEÆ.—WATER PLANTAIN TRIBE.

Sepals 3, green; *petals* 3, coloured; *stamens* varying in number; *ovaries* superior, numerous; *carpels* numerous, 1 or 2-seeded. This is a small Tribe of Aquatics, often floating, and with long-stalked leaves rising from the root. The roots of some species are used as food in various countries.

1. Alísma (Water Plantain).—*Flowers* containing both stamens and pistils; *stamens* 6; *carpels* 1-seeded. Name from *alis*, water, in Celtic.

2. Actínocarpus (Star-fruit).—*Flowers* containing

pistils and stamens; *stamens* 6; *carpels* 2-seeded, and arranged in a star-like form. Name from the Greek *actin*, a ray, and *carpos*, a fruit.

3. Sagittária (Arrow-head).—*Stamens* and *pistils* in separate flowers; *stamens* numerous; *carpels* 1-seeded. Name from the Latin *sagitta*, an arrow, from the shape of the leaves.

1. Alísma (Water Plantain).

1. *A. plantágo* (Greater Water Plantain).—*Leaves* egg-shaped, and heart-shaped, or lanceolate, all from the root: *capsules* bluntly triangular: *root* perennial. The large bright green leaves of this plant, placed on thick stalks, and strongly nerved, much resemble those of the Common Plantain, and are more conspicuous above the water than the flowers, though those which are quite under the surface are of a different form, being long and narrow. The flowers grow on a bluntly 3-sided stalk, which is two or three feet high and much branched at the upper part. They expand during July and August, are small, of a delicate rose colour, and so frail that they are scattered in gathering. Though this Plantain grows quite in the water, yet it is often near enough to the margin to be reached by the hand; and it is common in lakes, ditches, and pools throughout the kingdom. The tubers contain a nutritious farinaceous matter; and the plant has for some centuries past been regarded as a most valuable remedy in cases of hydrophobia. Several cases have been recorded by Lewshin, Moser, and other writers, in which two drachms and a half daily of the root were administered internally, and a cataplasm made

of the crushed leaves. Our best botanists, however, doubt if the plant is of any real efficacy in this malady. The roots are commonly eaten by the Kalmuc Tartars. A writer in the "Encyclopédie des Sciences" says, "It has the singular property of curing those who have eaten the sea-hare;" and adds, that Hoffman praises it as a vulnerary, and that it is by the peasants substituted for hellebore in the disorders of cattle.

2. *A. nátans* (Floating Water Plantain).—*Root-leaves* linear, taper-pointed, and sessile; *floating leaves* stalked, oblong, blunt; *stem* leafy, floating, and rooting; *capsule* marked with lines; *root* perennial. This is a rare species, found in ponds and lakes, chiefly in the north of England. The stems are thread-like, and from three to ten feet long; and the flower-stalks issue from the joints of the stem, and are erect and single-flowered. The blossoms appear in July and August, and are large and white, with a yellow spot near the centre; the root-leaves grow in small tufts, and are often little more than leaf-stalks.

3. *A. ranunculoídes* (Lesser Water Plantain).—*Leaves* all from the root, linear lanceolate; *flower-stalk* with simple branches, in one or two whorls; *capsules* angular, acute, numerous, in a globular head; *root* fibrous and perennial. In one form the plant is erect, in another trailing, the umbels rooting. This is not a common plant, though found in many ditches and bogs throughout the kingdom. It is much smaller than the Great Water Plantain, which it otherwise resembles, except that its flowers are larger, and grow in one or two whorls. They expand in August, and are of a pale purplish colour. The flower-stalks are from three to ten inches long.



1 COMMON SEA-WRACK
Vesiculosus domestorum

2 GREATER WATER PLANTAIN
Alisma plantago

FLOATING WEED
Nymphæa

5 COMMON ARROW HEAD
Sagittaria sagittifolia

6 MARSH WORT
Triglochin palustre

7 SEA SIDE WORT
Tetragonum maritimum

2. Actínocarpus (Star-fruit).

1. *A. Damasónium* (Common Star-fruit).—*Leaves* oblong, all from the root; *capsules* awl-shaped; *styles* 6; *root* fibrous, and perennial. This, which is not a frequent plant, occurs in ponds and ditches in the midland and south-eastern counties of England. The leaves float on the water on long stalks; and the flowers, which grow in whorls on a stalk about six inches high, are white, with a yellow spot in the centre. The fruit is very remarkable for its starry form, and the carpels are very large. This was one of the numerous plants which had an old repute for curing the imagined poison of the sea-hare.

3. Sagittária (Arrow-head).

1. *S. sagittifólia* (Common Arrow-head).—*Leaves* on long stalks, all from the root, arrow-shaped, the lobes lanceolate and straight; *root* perennial. The large bright green arrow-shaped leaves of this plant render it of easy recognition, even by those who are not botanists. The borders of many a stream or river present a mass of verdure by the quantities of its foliage. In July and August very pretty white 3-petalled flowers, with sometimes a blush of pink upon them, grow in whorls, on a stalk about six or eight inches above the water. The plant sends out runners, each one ending in a tuber, and these tubers contain a large portion of a nutritious substance. In China, Japan, and Siberia, the plant grows in great abundance in the pools; and the Chinese cultivate it to a considerable extent, as the tubers con-

stitute a large proportion of their vegetable food. The tubers are dried; and the powder into which they are ground is described as similar to the West India arrow-root, but having a somewhat acrid flavour. Probably this acridity might be removed by the same preparation as that which renders the far more acrid root of the Arum as tasteless as the flour of wheat. The Chinese use several plants as food which are not commonly considered fitted for it; and their government gives considerable attention to the subject. Dr. Badham, in his work on the "Edible Funguses of Britain," mentions that M. Stanislaus Julien presented to the Académie des Sciences a Chinese work, consisting of six volumes, with plates, entitled the "Anti-famine Herbal," containing the descriptions and representations of four hundred and fourteen different plants, whose leaves, rinds, stalks, and roots, are fitted to furnish food for the people, when drought, ravages of beasts, or the overflow of the great rivers, has caused a failure of rice and other grain. The Chinese government annually prints and distributes this book gratuitously in the districts which are most exposed to these calamities; and the Doctor adds, that the example of the Chinese ought to be suggestive to us that a more general knowledge of the properties and capabilities of esculent plants would be an important branch of education. It has been suggested to some practical men, that the Water Arrow-head should, in this country, be cultivated as an experiment; but it is thought that this would be attended with too great an expense. The tubers attain a larger size in China than in this country.

Mr. Baxter, referring to this beautiful Aquatic, remarks, "Representations of this often occur in Oriental paintings, associated with the consecrated Cyamus, or Sacred Bean. The late Mr. Payne Knight, so distinguished for profound learning, suggested to Sir J. E. Smith, that as the Cyamus is an acknowledged emblem of fertility and reproduction, the Arrow-head indicates the contrary, or a destroying power. They are the Egg and the Anchor, or the Arrow-head, so general in architectural ornaments."

A Brazilian species of *Sagittária* is very astringent, and its expressed juice has been employed in the preparation of ink. Our native plant is, in country places, often called Adder's-tongue. The French term it *Sagittaria.*

Order XCIV. JUNCAGINACEÆ.—ARROW-GRASS TRIBE.

Flowers perfect; *perianth* green and small, or none; *stamens* 6; *ovaries* 3—6, superior, united, or distinct; *carpels* 3—6, 1—2-seeded. This is a small Order of Marsh plants, possessing no remarkable properties.

1. Triglóchin (Arrow-grass).—*Perianth* of 3 outer and 3 inner erect leaves; *stamens* 6; *flowers* arranged in a spike. Name from the Greek *treis,* three, and *glochis,* a point, from the three points of the capsule.

2. Scheuchzéria.—*Perianth* of 6 reflexed leaves; *flowers* in racemes; *stamens* 6; *stigmas* sessile; *capsules*

2-valved, 1—2-seeded. Name in honour of the Scheuchzers, Swiss botanists.

1. Triglóchin (Arrow-grass).

1. *T. palústre* (Marsh Arrow-grass).—*Leaves* linear, channelled and succulent, all from the root, smooth, and nearly erect; *capsule* 3-celled, narrow; *root* fibrous, and perennial. This is an abundant plant by the sides of rivers and on marshy lands, and might, during June and July, at the first glance, be mistaken for the Sea-side Plantain, though its flowers are much fewer, and more scattered over the upper part of the stalk. They are green, sometimes tinged with red. The succulent leaves are membranous, and sheathing at the base. Cattle are very fond of this plant.

2. *T. marítimum* (Sea Arrow-grass).—*Leaves* semi-cylindrical, all from the root; *capsule* egg-shaped, 6-celled; *root* perennial. This species is much like the last, but is a taller and stouter plant, and well distinguished by its rounded capsule, and paler green hue. It has a saline flavour, and its greenish-yellow flowers expand from May to September. Both species are quite innoxious, but they afford little nutriment. Goldfinches may be seen sometimes pecking very busily at their young buds. The genus was formerly called *Juncago*, because the plants, like the rushes, grow in bogs and wet situations. The French call our plant *Troscart*; the Germans, *Salzgras*.

2. Scheuchzéria (Scheuchzeria).

1. *S. palústris* (Marsh Scheuchzeria).—*Stem* erect, unbranched; *leaves* alternate, blunt, semi-cylindrical;

root perennial. This plant is, by its slender semi-cylindrical leaves, very nearly allied to the rushes. It bears, in July, a raceme of yellowish-green flowers, with large bracts, on a wavy stalk, about six inches high. It is very rare, growing among the bog-mosses in some tracts of Yorkshire, near Shrewsbury, and at Methven near Perth.

Order XCV. TYPHACEÆ.—REED-MACE TRIBE.

Stamens and *pistils* in separate flowers on the same plant; *flowers* in dense spikes or heads, not enclosed in a sheath; *perianth* composed of 3 scales, or a tuft of hairs; *stamens* 3—6, distinct, or united by their filaments; *anthers* long, and wedge-shaped; *ovary* single, superior, 1-celled; *style* short; *stigma* linear, lateral; *fruit* 1-celled, 1-seeded, not opening. This is a small Order of Herbaceous plants, with jointless stems, and sword-shaped leaves, common in marshes and ditches.

1. Týpha (Reed-mace).—*Flowers* in spikes; *perianth* none, except hairs; *stamens* surrounded with hairs; *anthers* 3 together on one filament; *ovary* stalked, with hairs at its base. Name from the Greek *typhos*, a marsh, from the place of growth.

2. Spargánium (Bur-reed).—*Flowers* in dense globular heads, each with a single perianth of 3 scales; *stamens* 3 in the barren flower; *stigma* of fertile flower awl-shaped. Name from the Greek *sparganon*, a little band, from the long leaves.

1. Typha (Cat's-tail, or Reed-mace).

1. *T. latifólia* (Great Reed-mace).—*Leaves* linear, somewhat convex beneath; *catkin* continuous, its common stalk hairy; *root* perennial. During the months of July and August, few plants are more conspicuous than the Great Reed-mace among the reeds and sedges which fringe our lakes and pools. Its round erect stem is often six feet high, and its leaves an inch broad, three or four feet long, and of a bluish colour. The long spikes of flowers on their reedy stem render its name of Reed-mace very appropriate; the fertile spike is thick and brown, often a foot long, bearing at its summit the long slender yellow terminal barren one, which has one or two large bracts. Village people call the plant Bulrush, and believe that it was woven into the cradle for the infant Moses; and Rubens and other Italian painters represent our Saviour as holding this plant in his hand, when, in cruel mockery, a reed was given him as a sceptre. The flower abounds in yellow pollen, which is so inflammable, that if a candle is applied to it, it instantly produces a flash of light. It was on this account formerly used, instead of the spores of the Club-mosses, in exhibitions of fireworks; but it is not easily collected in any quantity. Professor Burnett says, that it is a good stimulant in the cure of diseased skin; and Gerarde records that the "downe of the reed-mace hath been proved to heale kibed or humbled heels, as they are termed, either before or after the skin is broken." As the brown portion of the catkin ripens, the downy tufts, which are very numerous, loosen from



1 . GREAT REED MACE.
Typha latifolia.

2 . LESSER R. M.
T. angustifolia.

1 BRANCHED BUR REED.
Sparganium ramosum.

2 UNBRANCHED [illegible]

their hold, and, becoming gradually detached, fly in multitudes on the summer breeze. They are sometimes used for filling pillows and mattresses; and Kalm mentions that the Swedes formerly placed this down in their beds instead of feathers, but that it became matted and entangled in the course of time. The long leaves are used in thatching; mats and baskets are made of them; and coopers sometimes put them between the staves of casks to prevent leakage. The Swedes lay these leaves beneath the horse's saddle to relieve the pressure. Haller mentions that the roots are eaten in salad. The plant contributes much to the luxuriant growth of our aquatic herbage, inasmuch as, with its companions by the water-side, by its successive growth and decomposition, it renders the soil fitted for more important plants. The Reed-mace is in Kent often called Flax-tail; the French call it *Massette*.

2. *T. angustifólia* (Lesser Reed-mace).—*Leaves* linear, convex beneath, channelled above; *barren* and *fertile spikes* usually separated from each other, both cylindrical; the common *stalk* scaly; *root* perennial. This species, which is much smaller than the last, is not generally distributed. It is, however, common on the river and pool sides in some places, as in the neighbourhood of London. The stem is about four or five feet high, the catkins not nearly so thick as in the common species, and the leaves not so broad. A plant called *T. mínor*, with narrow bristled leaves, and mostly distant spikes, is described as having grown on Hounslow Heath, and near Little Crosby, Lancashire, but is a doubtful native.

2. Sparga'nium (Bur-reed).

1. *S. ramósum* (Branched Bur-reed).—*Leaves* triangular at the base, their sides concave; common *flower-stalks* branched; *stigma* linear; *root* perennial. This plant is well named Bur-reed, from the clustered fruits which, during autumn, look like large burs. It is one of our commonest Aquatics, and is two or three feet high, with a green sturdy branched stem, having on its upper part long narrow leaves, which wave in the winds with a rustling sound. In July and August the flowers appear growing in dense globular heads; the barren ones not much larger than peas, and the lower ones, which contain the fertile flowers, as large as marbles. After the flowers, the globular heads of seeds enlarge till they are of the size of a small apple. They are at first green, gradually becoming brown, when the ripened seeds fall. These are about as large and as firm and heavy as a grain of barley.

2. *S. símplex* (Unbranched Upright Bur-reed).—*Leaves* triangular at the base, their sides flat; common *flower-stalk* unbranched; *stigma* linear; *root* perennial This, which is a common water plant, is readily distinguished from the last species by its unbranched flower-stalk. It is about two feet high, and altogether smaller than the Branched Bur-reed. It grows in ditches, and by the sides of lakes and pools, and bears in July and August globular heads of pale yellow flowers.

3. *S. nátans* (Floating Bur-reed).—*Leaves* floating, flat; common *flower-stalk* unbranched; *stigma* egg-shaped, very short; *root* perennial. This species, though

abundant in the pools, lakes, and rivers at the north of this kingdom, occurs there only. It flowers in July, rising but a few inches above the surface of the water, and it has very long transparent leaves.

Order XCVI. ARACEÆ.—THE ARUM TRIBE.

Stamens and *pistils* separate, but on the same plant; *flowers* arranged on a spadix or central column, and enclosed in a sheath; *perianth* none; *stamens* numerous, sessile on the spadix; *ovaries* numerous, sessile below the stamens; *stigmas* sessile; *fruit* a berry. This is a remarkable Tribe of plants, possessing acrid and even poisonous properties, which are, however, removed by some means of preparing the roots, when they may be used as food. They are abundant in tropical countries, and the flowers and foliage of all the Tribe have much general resemblance to our only British species, the Cuckoo-pint.

1. Árum (Cuckoo-pint).—*Flowers* on a club-shaped spadix, which is naked above, and enclosed in a convolute sheath. Name from the Greek *aron*, its meaning doubtful.

1. Árum (Cuckoo-pint).

1. *A. maculátum* (Cuckoo-pint).—*Stem* none; *leaves* halberd-shaped, somewhat arrow-shaped, entire; *common stalk of the flowers* club-shaped, blunt; *root* perennial.

Every rambler in green lane, by the thick hedgerow, or the sunny bank which borders the meadow, delights in early spring, to see the bright green glossy leaves of the Cuckoo-pint, spotted often with dark purple stains, and commonly four or five inches long. Those of us whose youthful days were spent in companionship with birds and flowers and waving trees, could sympathize with the feelings of Clare:—

> "How sweet it used to be, when April first
> Unclosed the arum leaves, and into view
> Its ear-like spindling flowers their cases burst,
> Betinged with yellowish, white, or purplish hue!
> Ah, how delighted, humming on the time
> Some nameless song or tale, I sought the flowers!
> Some rushy dyke to jump, or bank to climb
> Ere I obtain'd them; while from hasty showers
> Oft under trees we nestled in a ring,
> Culling our lords-and-ladies. O ye hours!
> I never see the broad-leaved arum spring,
> Stained with spots of jet,—I never see
> Those dear delights which April still does bring,
> But Memory's tongue repeats it all to me."

Scarcely an English hedgerow but has, in March, its store of the glossy handsome leaves; while in April the tall spadix rears it head to the height of about three inches, sometimes being of a yellowish-green, at others greenish-purple, and often of a deep rich violet colour, though this tint is easily rubbed off. A ring of glands surrounds the middle of the spadix, and below this is a circle of sessile anthers; while, lower still, it is surrounded by the sessile ovaries, which, as the year advances, develop into a cluster of brilliant scarlet berries. Long after the leaves have withered, the stalk,



1 CUCKOO PINT
Arum maculatum

2 SWEET SEDGE
Acorus calamus

3 OPPOSITE LEAVED PONDWEED
Potamogeton densus

4 FENNEL LEAVED P.

about a foot high, thickly covered at the top with these fruits in a conspicuous mass, may be seen glistening among the sober-tinted wintry leaves beneath the woodland boughs. The berries are highly poisonous, and every part of the plant is acrid. Its Greek name is thought by Professor Hooker to have been derived from *ar* or *aur*, which in Hebrew and various old languages signifies fire, and to have been given from its burning taste; while Skinner thinks that its common country name of Wake Robin was bestowed because its acrimony would awaken the sleeping. The plant has a singular power of evolving heat from its spadix, at the expansion of the sheath. Professor Lindley records that Sennebier observed that the bulb of a thermometer, applied to the surface of the spadix of this species, indicated a temperature seven degrees higher than that of the external air; and M. Hubert found this heat in a more wonderful degree in the species termed *A. cordifólium*, in the Isle of France. A thermometer, placed in the centre of five spadixes of this plant, stood at one hundred and eleven degrees; and in the centre of twelve spadixes, at one hundred and twenty-one degrees, though the temperature of the surrounding air was only sixty-six degrees.

Many a country child knows something of the acridity of the Arum; and the Author once saw the lips and tongue of a little friend much inflamed by having bitten the spadix. The application of milk soothed the pain in some measure, but it was not wholly removed for more than an hour. Yet the root, which is a tuber, rather larger than a walnut, contains a farinaceous substance

well fitted for making bread, or a dish resembling in flavour the Indian arrow-root. The Author having, in a little book published some years since, named this flour of the root, was, during the famine in Ireland consequent on the failure of the potato crop, applied to by a gentleman residing in Galway for some information on the subject. The applicant, who commanded a fort in the neighbourhood of which the Arum grew in abundance, stated that he had roasted and boiled these tubers, but that they still retained too great an acridity for use. The Author, who could at that time discover no record of the mode of preparation, could only give the result of her own experiments on the plant, and directed her correspondent, after drying the root, to grate it into water, and after a time to remove the liquid. The sediment was again to be washed, and finally dried. The benevolent inquirer tried this plan, and afterwards assured his correspondent that he had thus been enabled to prepare several packets of flour, perfectly free from flavour, and fit for use. The celebrated Portland sago has been long known to be obtained from the Arum root. This substance, which is more like arrow-root than sago, has from time immemorial been made in Portland Island: and in 1797, a gold medal was given by the Society of Arts to Mrs. Jane Gibbs, for procuring a sample of starch for economic purposes from the root. A writer in the "Pharmaceutical Journal," who in the year 1853 resided near Portland, gives a full account of the process used in the island; and from his statement are gathered the following particulars. The starch, or arrow-root, is made by crushing the arum-

root in a mortar, stirring the mass in water, and straining off the liquor. The mass must be again washed and dried. The corms are said to yield about four pounds of fecula to the peck. The manufacture of this article was some years since much greater in Portland Isle than it now is, though it was never of any great commercial importance, and it is now almost extinct, and never seen out of the island, except in cases in which botanists make experiments upon plants. The writer adds that it was formerly customary to crop the lands in the island every other year, leaving them fallow during the intervening seasons, at which time the inhabitants received permission from the owners of the lands to dig up the arum-roots. But the theory of the rotation of crops is now acted on there, as elsewhere, and the once fallow land is now covered with the green blade, or in some spots has been built over. The Arum has consequently become much less abundant, and the writer found it difficult at that time to procure a sample of the Portland sago; he also ascertained that an old woman in the island was now the sole manufacturer. The plant, besides its almost universal name of Lords-and-Ladies, is called in the island by its old name of Cows-and-Calves, as well as Arrow-root and Starch-root. The writer remarks, that it is singular that it should be called Arrow-root, probably from its arrow-shaped leaves; and asks—"May not the *Maranta arundinacea* (Indian arrow-root) have derived its name from the previously known and appreciated arrow-root of the Island of Portland?" The general opinion is, however, that the Maranta was so called because its pounded root is used by the Indians

to extract the poison from wounds inflicted by the arrow.

The tubers of various species of Arum form a very important article of food in many tropical countries. Dr. Joseph Hooker, when in the Himalayas, mentions having pitched his tent at ten thousand feet above the sea, amid an undergrowth of holly, and surrounded by magnificent rhododendrons, roses, willows, white flowering cherry, birch, and maple trees. "Some great tuberous-rooted arums," he says, "were very abundant, and the ground was covered with small pits, in which were large wooden pestles: these are used in the preparation of food from the arums, to which the miserable inhabitants of the valley have recourse in spring. The roots, when bruised, are thrown into the holes with water. In seven or eight days an acetous fermentation commences, and this is a sign that the poisonous principle is dissipated." The pulpy mass is afterwards boiled and eaten; its nutriment consisting in the starch, which exists in small quantities, and which the ignorant inhabitants have not the skill to separate by grating and washing. The Doctor adds that this food produces illness, and a loss of the skin and hair, especially when the root is insufficiently fermented; but in all probability a better mode of preparation would render the root perfectly wholesome. The *Arum esculentum* is much eaten by the South Sea islanders, and appears to form a really good food.

Besides the common modern names of our Cuckoo-pint, it was known by several others to old herbalists: they called it also Ramp and Friar's Cowl; and the

French still call it *Bonnet de Grand Prêtre*, as well as *Pied de Veau*, *Pain de Lièvre*, *Le Gouet*, and in the southern provinces *Chou poivre*. It is said to form the basis of their celebrated cosmetic, termed Cypress powder, which is one of the few cosmetics which are perfectly harmless. The Germans call the plant *Aronswurz*. Gerarde tells how the root was used "by way of cataplasm, blister-wise." The green leaves were commonly placed on the skin in eruptive disorders, and even the berries were crushed and drunk with wine, though this must have been a dangerous medicine. An old writer remarks: "Tragus reporteth that a drachm weight or more, if need be, of the Spotted Wake Robin, either fresh and greene, or dried and taken, is a present and sure remedy for poison and the plague. The juice of the herb swallowed to the quantity of a spoonful, hath the same effect; but if there be a little vinegar added thereto, as well as to the root aforesaid, it somewhat allayeth the sharpe biting taste upon the tongue." Modern medicines are not very pleasant to the palate, but truly may the invalid rejoice that the caustic arum-juice is not among them. The root when fresh is undoubtedly very stimulant; and Uttmüller says, that cut in small pieces, and taken in brandy, it is a good medicine for loss of appetite, but it is a highly dangerous one.

An allied plant, called by our forefathers Dragon, Dragaunce, Nedder's Tongue, Nedder's Gryffe, Serpentine Arum, or Aron, is the singular Garden Dragon Arum, which emits a most offensive odour, and has brown and purple spots on its leaf-stalks. It was in so common use as a medicinal plant, that an old herbalist says he

need not describe it, because it is to be found in every garden; and from the Household Book of the Earl of Northumberland, in 1511, it appears to have been yearly distilled for family use. Many virtues are ascribed to it; and, among other things, it is said that "Water of dragaunceys gode to wasshe venome soris."

But a still more frequent use was made of the arum-root, when, in the days of Queen Elizabeth, it furnished the starch for the ruffs worn by the gentlemen and gentlewomen of those times. Gerarde, who, like the people of Portland, called it Starch-wort, says, "The most pure and white starch is made from it;" but he adds, that it is "most hurtfull to the hands of the laundresse that hath the handling of it; for it chappeth, blistereth, and maketh the handes rough and rugged, and withall smarting." The immense lawn ruffs of those days needed some especially strong starch, nor could our English clear-starchers give them sufficient stiffness, till a Dutch woman came to London to teach the art of starching, and she probably used this root for her purpose. Queen Elizabeth, though she herself chose to wear these most uncomfortable ruffs, yet so disapproved of the excesses of her subjects in this particular, that she ordered men to stand at the city-gates to cut down all ruffs more than a yard deep; and it was probably well for the hands of the laundresses that, in the time of James I. ruffs grew into disrepute among the fashionable, because Mrs. Turner, an accomplice in the death of Sir Thomas Overbury, was hanged in this article of dress. John Ray mentions that arum-roots were used as soap.

The berries of the Cuckoo-pint are eaten by birds, especially pheasants; and Mr. White, of Selborne, remarked, that in severe winters thrushes dig up and eat the roots.

ORDER XCVII. ORONTIACEÆ.—SWEET-SEDGE TRIBE.

Flowers perfect, arranged on a central column or spadix, at first enclosed in a sheath; *perianth* of 4—8 scales; *stamens* the same in number as the scales; *ovary* superior; *fruit* a berry. This Order consists of Herbaceous plants, with broad, often sword-shaped, leaves.

1. Ácorus (Sweet Sedge).—*Sheath* leaf-like, not convolute; *spadix* cylindrical, covered with sessile flowers; *capsule* triangular, abrupt, 3-celled; *seeds* several. Name from *a*, without, and *corion*, the pupil of the eye, because formerly used in diseases of that organ.

1. Ácorus (Sweet Sedge).

1. *A. cálamus* (Sweet Flag).—*Leafy sheath* rising far above the spadix; *leaves* erect; *root* perennial. This plant grows on the banks of rivers in the midland and south-eastern counties of England, but neither very generally nor plentifully, except in Norfolk and Suffolk, where it is abundant. Though occurring in one or two places in Scotland, it is probably not indigenous to that part of the kingdom. It is very much like a sedge or large grass, but is readily distinguished by its spadix, which is two or three inches long, and of a pale brownish-

yellow colour, overhung by a long flat leaf, while stem, roots, leaves, and all portions of the plant, emit a most pleasant aromatic odour. Our fathers called it Cegge, or Wylde Gladone, and this, as well as the common sedges, probably shared in the general name of Stare, or Starre. The French call it *L'acore odorant*, and the Italians *L'acoro;* it is the *Kalmus*, or *Calamus*, of the Germans. In some country places it is called Myrtle Sedge, probably because, like the Myrtle, it is a fragrant plant. The whole herb is both aromatic and bitter; and Linnæus remarked that it was the only aromatic plant of northern climates.

In former days the Sweet Sedge was used in the garlands hung in churches or dwellings. When floors were strewed with rushes, this sedge was probably used by the rich; and some writers believe it to have been very generally employed for this purpose, and to have been, in former days, much more plentiful in this kingdom than it now is. From time immemorial it has been used for strewing the floors of the cathedral of Norwich, and been thrown on some of the adjoining streets on the day of choosing the mayor of that city, and also on other festival days, while common rushes and sedges sometimes mingle with it on these occasions. When trodden on, its fragrance becomes stronger, and the old cathedral seems filled with incense. The people of Norfolk still prize it as a cure for agues, and grind the root to powder to be thus used; and the root has been thus employed medicinally since the days of Hippocrates. It has, doubtless, tonic properties, and in our own times has proved a successful remedy in fever, even in

cases in which Peruvian bark has failed. In Egypt it is called *Cassabel*, and is much valued, and the roots have long been imported into this country from the Levant, though our own are as good as those of the foreign plants. The root, or rather root-stock, is very large, and full of a farinaceous substance, rendered fragrant by an essential oil. In Turkey it is made into a sweetmeat, and sold in the shops as a stomachic, and is peculiarly prized during the prevalence of any infectious disease. It formerly grew on the brinks of rivers about London, but Professor Burnett, who remarks that it is consumed in great quantities by perfumers and the makers of hair-powder, says that it has been almost wholly destroyed in that neighbourhood by their continual maraudings.

Order XCVIII. PISTIACEÆ.—DUCK-WEED TRIBE.

Stamens and *pistils* in different flowers on the same plant; *flowers* 2 in a spathe, but without a spadix; *perianth* none; *stamens* 1—2, distinct; *ovary* 1-celled; *style* short; *stigma* simple. The Order consists of floating Herbaceous frond-like plants, without distinction of stem or leaf.

1. Lémna (Duck-weed).—*Spathe* membranaceous and cup-shaped; *flowers* from just below the margin of the frond. Name from the Greek *lepis*, a scale.

1. Lémna (Duckweed).

1. *L. mínor* (Lesser Duckweed).—*Fronds* inversely egg-shaped, and somewhat convex beneath; *root* solitary, annual. This is a plant with which all who have in summer-time gazed upon our standing waters are sure to be familiar. Lying there in large floating masses, mingling itself among the crow-silks and other *Confervæ*, it in some places almost covers the surface of the pool with a mass of verdure; all these common water-plants increasing so rapidly in warm weather as sometimes to occasion trouble to the owners of the waters. The little fleshy green frond has no distinct stem or leaf; it is nearly flat at the top, but slightly hollowed beneath, very thick, and succulent, of a bright green colour, sometimes a little tinged with purplish-red. These fronds are collected into twos and threes, each one sending down a single root. The Duck-weeds increase more by buds than by their flowers, but this species flowers very commonly in July; its flower is too inconspicuous to be seen, unless carefully looked for. Professor Lindley, in his "Ladies' Botany," a work most valuable to the young botanist, describes this flowering of the Duck-weed in the most simple and graphic manner. "If," he says, "you will fix your eye attentively upon a mass of it on a still sunshiny day, in June or July, you will probably discover exceedingly minute straw-coloured specks, here and there, on the edges of the plants; they have a sparkling appearance, and, notwithstanding their minuteness, readily catch the eye. These are the anthers, and they being found, you have only to carry home the plants, and

place them under the microscope, when all the secrets of their flowering stand revealed. Where the anthers have caught the eye will be seen a narrow slit, out of which they peep; if you widen this slit with your dissecting instrument, you will be able to extract the blossom entire, and you will have before your eyes the simplest of all known flowering plants. The flower consists of a transparent membranous bag, shaped like a water-caraffe, and split on one side; within it are two stamens and one ovary, with a style and simple stigma."

Country people still frequently call the Duck-weed Water-lens. Gerarde terms it Water-lentils, and adds, that the Dutch call it *Weerlinden*. He names it also as the Duck-weed, and gives a curious engraving, in which the ducks appear to be luxuriating upon it.

2. *L. polyrhíza* (Greater Duck-weed).—*Fronds* broadly egg-shaped, somewhat convex beneath; *roots* numerous. This is the largest of our native Duck-weeds, and has thick firm fronds, about half-an-inch long, and almost as broad. The under part is tinged with purple, and has several thick black fibres proceeding from one point. The flowers are unknown in Britain, and the plant is rare on our stagnant waters. It is, like all our Duck-weeds, an annual, sinking in winter to the bottom of the pool.

3. *L. gíbba* (Gibbous Duck-weed).—*Fronds* inversely egg-shaped, hemispherical beneath. This plant is about the size of the Common Duck-weed, and green above, but distinguished by its bulging lower surface, which is white and clear. It floats in ditches, pools, and lakes, flowering from June to September.

4. *L. trisúlca* (Ivy-leaved Duck-weed).—*Fronds* thin, between elliptical and lanceolate, serrated towards one end, and tailed at the other; *roots* solitary. This plant is not unfrequent on the waters of England. Its fronds are green, and clear at the margin, about half-an-inch long, bearing each a root, which is tipped with a little cap or sheath. This sheath is found to be an especial organ, formed before the root bursts forth. The form of this Duck-weed is very different from that of any other species; and Linnæus remarked that its flattened stalks, producing new plants, and crossing each other, resembled in their mode of growth the *Opúntia*, or Indian Fig. It is a common species on ponds and lakes.

Order XCIX. NAIADACEÆ.—POND-WEED TRIBE.

Flowers perfect, or imperfect; *perianth* either composed of scales, or wanting; *stamens* free, 1, 2, or 4; *ovaries* 1-celled, fruit either a hard nut, or a drupe enclosing a hard nut, 1-seeded. This Order consists of plants inhabiting ponds, streams, the sea, or salt-marshes; their leaves sometimes almost leathery, but more often thin and transparent, and the flowers small and green.

1. Potamogéton (Pond-weed).—*Flowers* in a spike; *stamens* and *pistils* in the same flower; *perianth* of 4 sepals; *stamens* 4; *carpels* 4, sessile. Name from the Greek *pótamos*, a river, and *geíton*, a neighbour.

2. Rúppia (Ruppia).—*Flowers* about 2 on a stalk;



1 IVY LEAVED DUCKWEED
Lemna trisulca

2 LESSER D
L. minor

3 GREATER D.
L. polyrrhiza

4 GIBBOUS D
L. gibba

stamens and *pistils* in the same flower; *perianth* none; *stamens* 4; *carpels* 4, at first sessile, afterwards raised, each on a long stalk. Name from Henry Bernard Ruppius, a botanist of the last century.

3. Zannichéllia (Horned Pond-weed). — *Flowers* axillary; *stamens* and *pistils* separate; *stamen* 1; *carpels* 4. Name from J. J. Zannichelli, a Venetian botanist.

4. Zostéra (Grass-wrack). — *Flowers* composed of stamens or pistils separately arranged in two alternate rows, in a long leaf-like sheath. Name from the Greek *zoster*, a girdle, from its long riband-like leaves.

1. Potamogéton (Pond-weed).

* *Upper leaves floating.*

1. *P. nátans* (Broad-leaved Pond-weed). — *Upper leaves* between oblong and egg-shaped, stalked, leathery, ribbed; *lower leaves* linear, membranous, sometimes bristly; *fruit* keeled at the back; *root* perennial. This, which is a very common plant in ponds, ditches, and slowly-moving waters, varies in size according to the depth of the water, scarcely having any submerged leaves in those which are shallow. The floating leaves are smooth, of a dull olive green, and two or three inches long, on long stalks; and the lower ones, when present, look like grass-leaves, and are sometimes a foot in length. The stem is round, and, in July and August, the cylindrical spikes of small green flowers rise above the surface of the pool. The roots are a favourite food of swans, and they are also eaten in Siberia by the peasantry. An old name for this plant was Water-spike; the French call it *Le Potamot*. It is

a common "river guest" in the waters of most European countries.

We have only to gather up from the waters a mass of this or any other common Pond-weed, and, on shaking it, we shall see to how many living things these Aquatics offer shelter, and probably food. Fresh-water snails, tadpoles, and many an insect, as well perhaps as a little minnow, or Miller's Thumb, lurks in a green hiding-place; and we may see the water-rat looking boldly out from among its branches, as if from a verdant bower. It is well known that fish are never so healthy in waters destitute of herbage as in those in which it exists. Aquatic plants assimilate for their own support much of that impure matter which abounds in most ponds and streams, and which is so noxious to animal life. The constant consumption, too, of the air by fish and other gill-breathing animals, requires a continual renovation, and this also is furnished by aquatic herbage. Sennebier showed the influence of vegetation in decomposing the carbonic acid given out in the processes of respiration and combustion, and he proved that this process is carried on beneath the water, as well as in the air. Even the green tapestry formed during winter on damp walls and stones by one of the Common Confervas, *Lýngbya murális*, proves of value to the hapless inmates of dark damp cellars, by rendering their air somewhat better fitted for breathing. Haller remarks of water plants in general, that their respiration being different from the plants which inhale atmospheric air, their leaves are often of a different texture, and pellucid, like oiled paper, being vascular, and though harsh and

ribbed, yet very brittle; while their surface, like that of aquatic animals, is destitute of hair or down of any kind.

2. *P. oblóngus* (Oblong-leaved Pond-weed).—*Leaves* all stalked, upper ones leathery, floating, oblong-elliptical, lower ones linear-lanceolate; *fruit* small, with the back blunt and rounded; *spike* slender, cylindrical, densely flowered, upon a long rounded flower-stalk; *root* perennial. This species, which is thus described by Mr. Babington, is by him considered as distinct from the last, of which some botanists consider it but a variety. This author remarks, that it is far from uncommon in wet ditches, small streams, and bogs. Its fruit is about half as large as that of *P. nátans*, and differs in form. It bears, in July, short spikes of greenish flowers.

3. *P. plantagíneus* (Plantain-leaved Pond-weed).—*Leaves* all shortly stalked, membranous, and pellucid, upper ones elliptical, floating, lower ones submersed, and oblong; *root* perennial. This Pond-weed has a creeping stem, which throws out long running shoots. It is a beautiful plant, with clear bright netted green leaves, and reminds one of some of the sea-weeds which rise so gracefully in the salt-water pools. It bears long greenish spikes of flowers in June and July, and is found in stagnant ditches and bogs in several counties.

4. *P. ruféscens* (Reddish Pond-weed, or Long-leaved Floating Pond-weed).—Upper leaves oblong, or inversely egg-shaped, tapering into a stalk; lower *leaves* lanceolate, and tapering at both ends; *root* perennial. In this plant the floating leaves are somewhat tough, and the lower thin and membranaceous. The plant is of a dull olive-green, more or less tinted with a dingy red colour.

It bears its spikes of greenish flowers in July, and is found in still waters and ditches in various parts of the kingdom.

5. *P. lanceolátus* (Lanceolate Pond-weed).—Floating *leaves* stalked, somewhat leathery, many-nerved, sometimes wanting; submersed *leaves* lanceolate, tapering at the base, membranaceous; *root* perennial. This plant bears its small, short, dense spikes of greenish flowers in July and August. It is a rare species, inhabiting pools and slow streams. It has very slender stems.

6. *P. heterophýllus* (Various-leaved Pond-weed).—Upper *leaves* elliptical, stalked, slightly leathery, but not thick; submersed *leaves* lanceolate, sessile, and membranaceous. In this plant the flower-stalks are enlarged at the upper part, and the spikes are dense. It flowers in July and August. It is a common species in pools, canals, ditches, and rivers.

* * *Leaves all submersed and pellucid.*

7. *P. críspus* (Curly Pond-weed).—*Stem* flattened, much branched; *leaves* narrow, oblong, blunt, sessile, serrate, usually wavy; *root* perennial. This is one of the commonest Pond-weeds of our ditches and rivers, bearing in June and July its short loose spikes of yellowish-green flowers. Its leaves are often very much frilled at the edge, and of a brighter green than many of the species. It is evidently a very favourite plant with ducks, and probably with many other water-fowl, both wild and domestic; and as its creeping roots penetrate the soft soil, it propagates itself so quickly

that it would, if left unmolested, soon fill a pond or slow river.

8. *P. perfoliátus* (Perfoliate Pond-weed).—*Leaves* heart-shaped, embracing the stem, uniformly membranaceous; *root* perennial. This, too, is one of our commonest species, and its long slightly-branched stems occur in ponds and lakes. Its leaves are clear, and, when young, of a dull olive-green, becoming browner as they grow older, and appearing, when dried, as a thin brown membrane. The Rev. C. A. Johns remarks, that in their dry state they are so sensitive of moisture, that if laid on the palm of the hand they will curl up. The plant bears, in July and August, short oblong spikes of greenish flowers.

9. *P. prælóngus* (Long-stalked Pond-weed).—*Leaves* oblong, blunt, sessile, nerved from the lower part, and half-clasping; *flower-stalks* very long; *stipules* large; *root* perennial. This rare species is one of the largest of our Pond-weeds, and is found in some ditches and rivers chiefly in the north of this kingdom, forming in deep water large thick masses just below the surface. It has very long stems, and clear dark green leaves, but the stipules are white, tinged with red, and are very long. The plant is well distinguished by the thick common foot-stalks of its flowers, which are from half-a-foot to a foot in length. It bears a cylindrical many-flowered spike in July.

10. *P. longifólius* (Long-leaved Pond-weed).—*Leaves* very long and lanceolate, narrowing below, and nearly sessile; *stipules* winged; common *flower-stalks*, very long; *root* perennial. This plant, which is found in

Lough Corrib, Galway, has long slender stems, and pellucid entire leaves, with very short stalks, and green prominently-winged stipules. Its spike of flowers appears in July and August.

11. *P. lúcens* (Shining Pond-weed).—*Leaves* between elliptical and lanceolate, narrowing at the top, and tipped with a short spine; *stipules* large and winged; *spike* dense, many-flowered; *root* perennial. This is a handsome Pond-weed. Its large clear olive-green membranous leaves have wavy edges, and are beautifully veined. It is the largest of our native species, and forms masses in ponds, ditches, and rivers, where it is often abundant. We have, however, no species like the *P. serratum* of the Swiss Lakes, which Haller describes as growing to the enormous length of from ten to twenty fathoms, forming a kind of forest in their waters. Our shining Pond-weed bears cylindrical spikes of green flowers, about two inches long, in June and July.

12. *P. pusíllus* (Small Pond-weed).—*Leaves* linear, acute, 3—5 ribbed, alternate, spreading at the base; *stem* round; *spikes* on very long stalks; *root* perennial. This species is not unfrequent in still waters in July, when it bears its nearly globular spikes of brownish-green flowers. Its leaves are usually very narrow, and expanded at the base, of a dull green. A variety with broader leaves is the Flat-stalked Pond-weed (*P. compressus*) of some writers.

13. *P. gramíneus* (Grassy Pond-weed).—*Leaves* linear, broad, alternate, sessile; *stem* round, forked; *flower-stalks* scarcely longer than the spikes or the stipule; *root* perennial. This is a rare plant, inhabiting ponds and



1 SMALL PONDWEED
Potamogeton pusillus

2 GRASSY P.
P. gramineum.

3 SHARP LEAVED P.

4 GRASS WRACK LIKE P.
P. zosteraefolius

5 CURLY P.
P. crispus

6 PERFOLIATE P.



LONG LEAVED LONG WEED
Polygonum longifolius

LANCE LEAVED P. W.
P. lanceolatum

ANGLED LEAVED P. W.
P. heterophyllus

5. REDDISH P. W.
P. rufescens

6 PLANTAIN LEAVED P. W.
P. plantagineus

7 OBLONG L. P. W.

ditches, bearing a dense egg-shaped spike in July. Its leaves are of a full deep though bright green, and look like glass as they float on the water.

14. *P. acutifólius* (Sharp leaved Pond-weed).—*Leaves* linear, taper, pointed, oval, compact, with numerous nerves, and on a short stalk; *root* perennial. This species was found by Mr. Borrer in marshy ditches at Amberley, Henfield, and Lewes, Sussex. It flowers in July.

15. *P. zosteræfólius* (Grass-wrack-like Pond-weed).—*Leaves* broadly linear, acute, with numerous nerves; *spikes* cylindrical, upon long foot-stalks; *root* perennial. This is a rare plant, inhabiting rivers and lakes, and flowering in July. Its spikes are about an inch long, and it is larger than the last species.

* * * *Leaves all submersed, without stipules.*

16. *P. dénsus* (Close-leaved Pond-weed).—*Leaves* opposite, egg-shaped, tapering to a point; *stem* forked; *spikes* 4-flowered; *root* perennial. This species is rendered of easy recognition by its pellucid crowded leaves, which clasp the stem, and turn backwards at the point. Its small roundish green spike appears in July and August, and the plant is common in pools, ditches, and slow rivers.

* * * * *Leaves all submersed, stipules sheathing.*

17. *P. pectinátus* (Fennel-leaved Pond-weed).—*Leaves* bristle-shaped, 1—3 ribbed, parallel, arranged in two rows; *spikes* interrupted; *root* perennial. This plant varies much in the length and size of its stems and leaves. It could not be confounded with any other

species but the following, from which it differs chiefly in having its spikes less interrupted, and its fruit being smaller. The nut is also ribbed on the back, while that of the next is without ribs. It is of a bright green colour, resembling Fennel, when lying in masses in the waters, and its stem is much branched. The spikes appear in July, are few in number, and slightly interrupted. It is a rare plant, inhabiting ponds, streams, and salt-marshes.

18. *P. filiformis* (Slender-leaved Pond-weed). — *Leaves* bristle-like, 1-nerved, sheathing by their stipules. This plant has spikes which are greatly interrupted, and grow on long foot-stalks. It flowers in June and July.

2. Rúppia (Ruppia).

1. *R. marítima* (Sea Ruppia, or Tassel-grass).—*Stems* long, slender, round, much branched, leafy; *leaves* linear, alternate; *root* perennial. This is a plant which, growing in salt-water pools and ditches, might at first be taken for the Small Pond-weed, *P. pusillus*. It has slender, much-branched stems, scarcely thicker than a packthread, and long slender bristly leaves with sheaths, which are often very conspicuous. But in July and August one may see plainly that this plant is not a Pond-weed, but that it has a very peculiar structure. The greenish flowers of this Ruppia grow in pairs, on a spike, which is enclosed at first in a membranous sheath, and they have neither calyx nor corolla, but their two anthers are very large. Aquatic plants have mostly some means of raising themselves above the water during the time of flowering, and this process is



1 SEA RUPPIA.
Ruppia maritima.

2 COMMON HORNED POND WEED.
Zannichellia palustris.

3 BROAD LEAVED GRASS WRACK.
Zostera marina.

4 DWARF [illegible] W.
Z. nana.

5 SWEET CYPERUS.
Cyperus longus.

6 BROWN C[illegible].
C. fuscus.

7. BLACK BOG RUSH.
Scirpus nigricans.

effected in the Tassel-grass by means of the flower-stalk, which lengthens at this season to some inches, according to the depth of the water, and coils itself up in a spiral form, so as to reach the surface. The Rev. Gerard Edward Smith remarks upon this plant, which he found, during June, at Dimchurch, in Kent, filling a narrow dyke, that he observed the pollen scattered over the water, and the small yellow spikes rising above its level, many having already discharged their pollen, while in a few the elevated anthers were yet entire. He adds, "The anthers are vesicular and buoyant; as they swell and become mature, the membranous sheath enclosing them is distended, and the whole is brought to the surface of the water. The flower-stalks are rapidly lengthened, the flowers quit the sheath, which then becomes a bladder, and aids the elevation of the spike an inch above the water. Presently the anthers burst, the vesicle loses its buoyancy, and the flower-stalks, bearing the fertilized stigma, sink within the bosom of the parent plant." He adds, that the spadix lengthened itself even when the plant was placed in a basin of water. The Tassel-grass is not uncommon in the pools of salt-marshes.

3. Zannichéllia (Horned Pond-weed).

1. *Z. palústris* (Common Horned Pond-weed).—*Flowers* axillary; *style* half as long, and in one form quite as long as the fruit; *leaves* slender, opposite; *root* annual. This plant, though not generally distributed, is very abundant in brackish pools in various parts of

England. Its habit is to grow entirely submerged in water, having much the appearance of the Lesser Pondweed, *P. pusíllus;* but during its flowering season, which is from July to September, it is readily distinguished from that plant by its small green flowers seated in the axils of its leaves. Its long thread-like branched stems, a foot or a foot and a half long, form tangling masses. The stigmas of the plant are very remarkable for their broadly expanded, uneven, cup-like form. The capsules are dry and one-celled, bearing usually but one seed, and each has an awl-shaped termination, which makes it look something like a bird's claw.

4. Zostéra (Grass-wrack).

1. *Z. marína* (Broad-leaved Grass-wrack, or Sea-grass).—*Leaves* broad, linear, entire, nerved; *spadix* bearing numerous flowers; *root* perennial. All who have observed the long bright leaves and flexible stems of the Grass-wrack, floating gracefully in the seaside pool, will acknowledge the appropriateness of the scientific name, derived from the Greek *zoster*, a riband. The leaves are long and blunt, with sheathing bases of bright but rather deep glossy green. They grow from among the ledges of rocks, and in sandy shallows, on sea-banks, and in salt-water ditches, sometimes covering acres of shallow water, and floating in pools among green laver and purple dulse, till some rough wave dashes over them, and, tearing up large masses, casts them upon the weedy shore. Sometimes the long leaves are seen floating above the mud right down in the deep sea, and

seem welcomed by many a gliding little fish, or darting crustacean, or slow-moving mollusc, or quaint zoophyte—

"Where 'neath your keel the verdant sea-grass waves."

It has, however, little affinity with the sea-weeds among which it floats; for it has roots, and leaves, and flowers, the green flowers forming two rows on one side of the spadix. It is destitute of calyx and corolla, but is provided with anthers and pistils, which grow alternately, and the numerous seeds ripen amid the salt waters in September. These are round and white, and contain a farinaceous substance. The lower part of the stem, which is often tinted with reddish-brown, is of a sweet flavour. This Grass-wrack is very abundant in some parts of the coast; on those of Yarmouth, it is torn up by the waves, and strewn so profusely, that mounds are formed of its blackened stems and leaves for the purpose of resisting the encroachment of the sea. Mr. Gosse, describing the shores of Weymouth, says, "Between tide-marks the pebbles are washed clean by the surf, but along the line of high water there is a broad bank of black sea-grass, the accumulation of years, perhaps ages, rotting into mould, and forming an admirable manure. It is, indeed, used for this purpose, being carried away by the farmers, where it is sufficiently abundant and sufficiently accessible. In the vicinity of Torquay and of Ilfracombe, I had not met with this substance in any appreciable quantity, but in Poole Harbour, the scene of my early life, I had been familiar enough with it, as its dirty littering banks, like a continuous dunghill, fringe the shores, the

refuse of hundreds of acres of the grass that grows on the muddy flats of that land-locked harbour."

Both in Sweden and Holland this sea-grass is very extensively used as a manure, and is preferred to hay for filling mattresses. It is sold in England by upholsterers under the name of *Alva marína*, which is probably a corruption of *Ulva*. It is sometimes used for thatch, and is said to last more than a century, often becoming quite bleached by exposure to sun and air. In sea-coast towns it is collected from the shore for packing earthenware and glass; and the rush-like coverings which surround the Italian liquor-flasks are made of this plant. Cows refuse to touch it, but it is eaten by horses and swine. Hugh Miller remarks of the Grass-wrack, that it is very susceptible of frost, and he says that he has seen large quantities nipped by it. The French call the plant *La zostére*, and the Germans, *Seetang*. A slender variety, growing in mud, with about half the number of nerves in its leaves, is sometimes termed *Z. angustifólia;* and a small plant, scarcely three inches long, with slender leaves, which have but one nerve, is described as *Z. nána*. Some botanists doubt if the three plants are truly distinct. In this dwarf Grass-wrack the nuts are described as smooth, while in the other kinds these are marked with fine lines. The dwarf plant grows in muddy salt-water pools in the south of England, and has been found on Dover beach.

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